The RUBBER AGE

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LATE NEWS of the Industry

Ajax Rubber Company Defaults Interest On $1,517,000 of First Mortgage Bonds

THE Ajax Rubber Company has notified the New York Stock Exchange that the interest payment due December 1 on its first mortgage 15-year 8 per cent. sinking fund bonds, due 1936, is not being paid. The committee on securities of the exchange has ruled that from that date these bonds will be dealt in flat. A bondholders' protective committee has been formed and has requested holders to deposit their bonds with it.

There were outstanding on December 31, 1929, $1,517,000 of this issue out of a total original issue of $3,000,000 brought out in 1921. The only other funded debt outstanding consists of $500,000 of 8 per cent. convertible promissory notes, issued January 1, 1928, in exchange for the preferred stock of the McClaren Rubber Company, which was merged with Ajax. The next interest on these notes is due on January. Capital stock outstanding on December 31, 1929, totaled 880,330 shares of no par value.

The Ajax Rubber Company has met with the same difficulties shared by a number of other small tire manufacturing units which have not been able to profit in recent years owing to the competition of the large low-cost manufacturers. The current year will be the fifth consecutive one in which the company has reported a deficit.

For the year of 1929 the company showed a loss of $2,468,248 after interest, depreciation, inventory adjustments and other charges. In 1928, after crediting reserves of $500,000 for rubber fluctuations set aside at the end of 1927, the net loss was $2,063,970, including several extraordinary charges. In 1927, net loss amounted to $1,990,698 and in 1926 to $292,807.

The Ajax Rubber Company sold and dismantled its plant in Trenton, N. J., in 1928 and in July of this year shut down its factory at Racine, Wis., in order to concentrate production at the McClaren plant at Charlotte, N. C. It was recently reported that the output of this plant had been stepped up to 1,700 tires daily. No official sales figures for the company have been published, but its annual business is believed to approach $15,000,000.

The Ajax company was founded in 1905 as the Ajax Standard Rubber Company, and in 1906 was consolidated with the Grieb Rubber Company to form the Ajax-Grieb Rubber Company. The present company was incorporated in 1916 to acquire the Ajax-Grieb company. Subsidiaries include the Ajax Rubber Company, Inc., Racine Rubber Company, Inc., Racine Housing Association, Ajax Tire Company of Nashville, Tenn., and the McClaren Rubber Company. The company has selling branches throughout the United States.

The last year in which Ajax returned a profit was in 1925, when the company earned $1,005,070, as compared with a profit of $664,129 in the year preceding. The best year in its history was 1919, when the net profit was $2,201,268. The common stock of the company dropped last year from $11.25 a share to $1 and this year has sold as low as 50 cents a share on the New York Stock Exchange. The first mortgage 8 per cent bonds on which interest was defaulted are now selling for a fraction of their original par value.

Motor Parts and Accessory Business Reveals Improvement During October

OPERATIONS in the parts-accessory industry are holding up in a favorable manner, according to the Motor and Equipment Association, which includes several rubber manufacturers in its membership, and October business of makers of accessories and parts for the replacement trade actually ran ahead of September. Approximately the same rate of activity was also maintained in November. Suppliers of original equipment to the car and truck makers reported October shipments only slightly below September.

The existence of a favorable volume of service business in the garages and repair shops is indicated further in the sharp gain in sales registered by M. E. A. wholesalers in October. The grand index of sales for the group of member wholesalers reporting to the association jumped from 120% in September to 155% in October. Sales were higher in September in eleven of the twelve Federal Reserve Districts in this country and were also heavier in the Dominion of Canada.

The grand index of shipments for all groups of manufacturer members reporting their figures to the association in October stood at 86% of the January, 1925, base index of 100 as compared with 89 in September, 91 in August and 156 in October a year ago. Reports by divisions, of member manufacturers' business in October show appreciable increases for several groups.

Bridge With Paving Blocks of Rubber Is Completed in New Jersey

RUBBER block paving of the type used in several foreign cities has been laid on the new Market Street bridge, a $500,000 structure linking Passaic and Warrington, N. J., over the Passaic Canal. The new bridge with its noyel paving was opened to traffic on November 25.

Experimentation has shown the difficulty of holding rubber paving on a concrete base, but on the Market Street span it is believed that this difficulty has been overcome. The rubber was laid in hexagonal blocks one inch thick with dovetail plugs which were set in the concrete base before it hardened. Blocks of yellow rubber were used for traffic markers, the entire paving being planned and developed by the United States Rubber Company.

The advantages given for the paving are that it reduces vibration and weight as well as noise, is durable and tends to minimize skidding.

Statisticians See No Sustained Profits For Rubber Trade with Present Policies

REITERATING several of the criticisms leveled against the domestic rubber industry in their survey of last February, the editors of *Standard Trade and Securities*, published by the Standard Statistics Company, late last month predicted that unless new and wiser policies prevail among tire manufacturers the industry will not be consistently profitable over the next few years. They agree that there are encouraging developments apparent, but find that "the brightened 1931 outlook is still in danger of being obscured by the uncertainties created through competitive practices."

That the industry has not yet developed to a stage of efficient co-operative management, the report says, is indicated by its surrender to another 12 months' loss on original equipment business through the recently announced plan of a further 5 to 10 per cent price cut in that field. The editors regard finished goods inventories as appreciably improved and foresee 1931 sales of 63,000,000 casings as against only 55,000,000 this year. All of the chief ingredients of tires—rubber, cotton and carbon black—are so much cheaper, they find, than at the beginning of 1930 that the difference in costs of production will be substantial.

"On the basis of current indications," the report concludes, "next year holds the possibility of being much better than 1930 from a profits point of view. Increased replacement business, lowered costs and elimination of inventory losses constitute three tremendously favorable factors, the combined advantages of which could well go far toward restoring the industry to a position of substantial earning power.

"While admitting the weight of these three constructive influences, we recognize phases of weakness in the industry, which, unless kept under better than average control, are liable to vitiate all such advantages. Excessive production capacity, price cutting, multiplicity of discounts, lack of uniformity in treatment of dealers, jealousy and many other evidences of non-cooperation may be listed as factors which still threaten the stability and prosperity of the group.

"Unless new and wiser policies prevail among tire manufacturers, we question whether the industry will, at least over the next few years, be consistently profitable. Prices for casings are too low in relation to the quality offered. As of November 1, a step in the direction of improvement was taken by marking up the retail quotations and giving the increased margin of profit to the dealers. This may strengthen the trade morale for next year's business, but it will do little lasting good unless followed by another advance for the benefit of the producers.

"The latest announcement relative to the marketing situation indicates that original equipment contracts next year will be accepted at prices 5 to 10 per cent under prevailing levels, which probably means another year of losses in this division. Also, such practices furnish further basis for distrust of the industry as a whole."

General Tire & Rubber Earns Dividends; Sales in Fiscal Year Over $24,000,000

DESPITE the fact that unit sales of tires this year, in the whole industry, are about 23 per cent lower than in 1929, unit sales of the General Tire & Rubber Company are a little ahead of last year, according to William O'Neil, president. Dollar sales volume of the company, however, is about 11 per cent lower than last year due to reduced selling prices, he said. On the basis of dollar sales reported for the fiscal year ended November 30, 1929, Mr. O'Neil's statement indicated that sales for the current fiscal year should exceed $24,000,000.

Net profit of General Tire for the fiscal year ending November 30 would probably be normal were it not for the fact that the company will have to charge off a substantial amount to take care of shrinkage in inventories resulting from the drastic decline in the price of cotton and rubber, along with other commodities, in the past year.

As a result net profit for the year probably will be substantially below that reported for last year. Mr. O'Neil estimates, however, that it will be sufficient to cover both preferred and common dividend requirements, including a special dividend on the common which will be paid in January, 1931, and preferred stock sinking fund requirements which amount to 2½ per cent of the largest amount of preferred stock outstanding during the year.

Present indications are that the special dividend to be paid next January will be $1 a share on common as compared with $2 last January. The common is on a regular $1 annual basis. Conditions in the company's business and in the industry as a whole at the time directors take action in December will, however, determine the size of the payment.

Preferred and common dividend requirements, including a $1 special dividend on the common, together with preferred stock sinking fund requirements, amount to approximately $700,000 annually. For the year ended November 30, 1929, the company reported a net profit of $1,536,758, equivalent after preferred dividends to $15.98 a share on 83,599 common shares.

Tire and Fabric Manufacturers Agree On Moisture Regain in Tire Fabrics

AT THE meeting of the Standardization Committee of Tire and Fabric Manufacturers, held in Boston, Mass., on October 15, 1930, one of the most difficult and perplexing problems which has confronted the tire fabric industry for many years was definitely and unanimously disposed of by this committee, namely, the matter of moisture regain in tire fabrics, both woven and on cones.

The committee has covered the whole subject very thoroughly, establishing a maximum standard of 6½% for allowable moisture regain covering deliveries over a period of a year, together with a tolerance up to 7% for individual shipments. Procedure covering method of fig-

uring rebate for excess moisture, etc., is also covered, as is a standard method for taking samples for moisture regain test and for determining moisture regain present. All this work has been based on actual data obtained by various members of the committee during the past several months, including northern and southern mills. Anyone desiring copies of these figures may obtain them by addressing the chairman of the committee, whose membership is as follows:

S. A. Steere, Goodyear Tire & Rubber Company
W. A. Karl, Firestone Tire & Rubber Company
H. C. Hebden, B. F. Goodrich Company
W. R. Marsden, Kelly-Springfield Tire Company
F. Kovacs, Seiberling Rubber Company
B. H. Foster, United States Rubber Company
C. G. Miller, McClaren Rubber Company
M. Castricum, Fisk Rubber Company
R. H. Adams, Callaway Mills, Inc.
A. E. Jury, Winnsboro Mills
C. B. Finckel, J. H. Lane & Company
L. A. Craybill, Bibb Manufacturing Company
F. Pieraccini, Tire Fabric Corporation
E. C. Gwaltney, Morgan Cotton Mills
K. B. Cook, Chairman, Manville Jenckes Company.

A standard method of calibrating a cord testing machine was also adopted by the committee.

Both these new procedures represent additions to the Standard Methods of Test for Tire Cord originally adopted by the committee June 7, 1929. Since this time, however, the methods have been enlarged considerably by the committee, and these methods in their entirety have been adopted by the American Society for Testing Materials through its Committee D-13. Copies of the complete specifications may be had by addressing the Society's headquarters in Philadelphia, A. S. T. M. designation D 179-30.

Raybestos-Manhattan Nets $951,976 During First Nine Months of 1930

THE earnings of Raybestos-Manhattan, Inc., during the nine months ended September 30, 1930, were $1,359,837, or $2.01 per share on the 676,012 shares of common stock outstanding, before providing $407,861 for depreciation of fixed properties, but after making all other charges against current income for federal and state taxes, adjustment of inventories, etc.

No part of the Company's reserve for contingencies of which $425,000 was set up specifically to provide for inventory adjustments was utilized during the period. If the entire reserve had been utilized, the earnings, before the charges of $407,861 for depreciation mentioned above, would have been $2.64 per share.

The sales and earnings were as follows, as compared with the year preceding:

	Quarter Ended	*Nine Months Ended*	
	Sept. 30, 1930	*Sept.* 30, 1930	*Sept.* 30, 1929
Net sales	$3,935,311.56	$13,506,762,76	$18,812,492.21
Net income after charges	260,983.56	1,359,837.54	3,564,753.89
Per share	.39	2.01	5.27
Depreciation	134,506.33	407,861.20	455,834.08
Net earnings available for dividends	126,477.23	951.976.34	3,108,919.81
Per share	.19	1.41	4.60

The company's total assets were $18,994,074, against which there were no bank loans, funded debt, or other capital obligations, other than the common stock.

The current assets, including cash, bonds, and other marketable securities aggregating $3,737,257, were $9,445,854, or approximately 11¼ times the current liabilities of $804,533. The company had in cash and readily marketable securities, representing the investment of surplus cash, enough to meet its dividend requirements for two years. The book value of the company's stock was $25.90 per share without including the reserve for contingencies already referred to. Of this value $13.97 per share was represented by current assets.

The directors declared the quarterly dividend of 65 cents per share payable December 15 to stockholders of record at the close of business November 29.

Rainbow Tire & Rubber Is Reorganized; To Operate as Truss Core Tire Company

REORGANIZATION of the Rainbow Tire & Rubber Company, which has a factory at Delaware, O., and offices at Columbus, O., has been completed. The properties of the Rainbow company will be transferred to a new corporation, which will be known as the Truss Core Tire Company, Inc., and which will start manufacturing operations in the near future.

Chartered under the laws of Ohio, the new company has an authorized capitalization of 3,500 shares of preferred stock and 15,000 shares of common stock, all of no stated par value. The officers of the Truss Core Tire Company include W. R. Davis, Boston, Mass., chairman of the board of directors; Charles Ross, Columbus, O., president; N. V. Hensel, vice-president; and George W. Savage, secretary and treasurer. These officers, together with James Lee Kauffman, New York City; William T. Hermey, Corning, O.; Oscar Teegardun, Duval, O.; Frank Milner, Leesburg, O., and Harry Lush, Plymouth, Mich., comprise the board of directors.

The Rainbow Tire & Rubber Company originally opened its factory in 1927 for the manufacture of the Ross Truss tube and was in operation until June, 1928, when it was announced that operations had been suspended to permit the installation of new tire making machinery. At that time it was stated that equipment would be added to bring the capacity of the plant to 3,000 tubes and 1,500 tires daily with employes on a two-shift basis. Due to the unsettled conditions in the industry, however, the plant has been permitted to remain closed up until the present time.

It is believed that the factory will re-open this month for the manufacture of a casing that is said to be non-puncturable, as well as inner tubes.

Dr. Laird to Address N. Y. Rubber Group

MEMBERS of the New York Group of the Rubber Division, American Chemical Society, are preparing for their second fall meeting as this issue of THE RUBBER AGE goes to press. The meeting is scheduled for the evening of December 10 at the Roof Garden of the Park Central Hotel, Seventh Avenue and 56th Street, New York City. Following a dinner which will start at 6 P. M., there will be a talk by Dr. Donald A. Laird of Colgate University on "The Role of Smell in the Sales of Rubber and Methods of Deodorization." A motion picture of "The Story of Carbon Black" will be presented through the courtesy of the Binney & Smith Company, with D. F. Cranor of that organization describing the film. Music, souvenirs, prizes and other entertainment features are scheduled.

BUY NOW—Crude rubber will never again go to present levels.

(Other news of the industry will be found on pages 259-265)

Rubber Industry Shipments Reveal Slight Increase

Value of Shipments in Third Quarter is Highest for Current Year, But Still Remains 26.3 Per Cent Below Same Period in 1929

WHILE shipments of rubber goods showed a very slight increase in the third quarter as compared with the first two quarters of the present year, their value was 26.3 per cent below the corresponding period in 1929 and still further below the third quarter in 1928. The consumption of crude rubber in July, August and September was the lowest for any third quarter since 1924, reflecting the low rate of production due to the desire of manufacturers to reduce inventories.

The actual value of all shipments of manufactured rubber products during the period totaled $240,585,000, as compared with $239,223,000 in the second quarter of 1930 and with $326,292,000 in the third quarter of 1929. Tires, tubes and tire repair materials, as usual, comprised the greater part of the total sales value of all rubber goods. The value of these items alone reached a figure of $162,346,000, as against $78,239,000 for all other rubber products. Sporting goods, toys and novelties were the only group to show an increase in sales over the third quarter of last year.

In amount of crude rubber used, tires, tubes and tire repair materials absorbed 69,949 long tons out of a total of 85,261 long tons consumed by the entire industry in the third quarter. Total crude rubber consumption in the second quarter was 112,092 long tons and in the third quarter of 1929 amounted to 113,746 long tons.

That the domestic rubber industry is due to drop out of the "billion dollar class" in respect to its annual factory sales is indicated by the combined figures for the first nine months of 1930. During this period, the total of all rubber goods shipments totaled $698,124,000, as compared with a total of $913,178,000 during the first three quarters of 1929. Even if sales in the fourth quarter equalled those for the same period in 1929 or 1928, the year's total would be well below the billion dollar mark.

In the first nine months of the year, consumption of crude rubber totaled 299,100 long tons, as compared with the record total of 381,603 long tons in the period from January to September, 1929. Rubber consumption for the first three quarters was, therefore, down 21.6 per cent, while the value of factory shipments declined 23.5 per cent.

The figures presented in the table below are estimated by the Rubber Manufacturers Association to represent 92 per cent of the American manufacturing industry, but those quoted in this article have been raised so as to represent 100 per cent of the domestic industry.

Comparative Table of Value of Rubber Goods Shipments from Manufacturing Plants and the Amount of Crude Rubber Consumed for the Past Quarter and Previous Quarters

Total Sales Value of Manufactured Rubber Products Shipped

Thousands (,000) omitted.

Product	3Q-30	2Q-30	1Q-30	3Q-29	3Q-28
Tires and Tire Sundries					
1 Auto and Truck Casings	$123,882	$121,882	$105,939	$169,903	$190,986
2 Auto and Truck Tubes	17,895	17,215	15,619	23,604	29,755
3 Motorcycle Casings and Tubes	268	253	243	405	585
4 Bicycle casings and Tubes	679	621	534	877	813
5 Aeroplane Casings and Tubes	102	130	83	100	118
6 Solid and Cushion Tires	2,719	2,683	2,374	4,752	7,219
7 All Other Solid Tires	272	324	335	721	374
8 Tire Sundries and Repair Material	3,541	3,167	3,712	4,737	5,807
TOTAL—Tires and Tire Sundries	$149,358	$146,275	$128,839	$205,099	$235,657
Other Rubber Products					
9 Mechanical Rubber Goods	$20,031	$ 26,578	$ 24,149	$ 28,234	$ 25,756
10 Boots and Shoes	25,421	17,683	20,148	31,266	26,890
11 Insulated Wire and Insulating Compounds	5,802	7,256	7,089	8,963	7,605
12 Druggist Sundries, Medical and Surgical Rubber Goods	1,887	1,827	1,626	2,409	2,310
13 Stationers' Rubber Goods	478	564	585	631	634
14 Bathing Apparel	371	1,636	709	503	465
15 Rubber Clothing	1,411	1,012	1,083	2,696	2,963
16 Automobile Fabrics	1,342	2,179	2,230	3,267	2,380
17 Other Rubberized Fabrics	2,385	1,612	1,506	2,751	3,544
18 Hard Rubber Goods	1,555	1,220	1,257	1,889	2,157
19 Heels and Soles	4,651	4,659	5,945	6,298	5,657
20 Rubber Flooring	803	1,117	1,029	1,366	1,097
21 Sporting Goods, Toys and Novelties	2,737	3,307	1,793	2,002	1,877
22 Miscellaneous, not included in any of above Items	3,106	3,161	2,862	2,815	3,861
TOTAL — Other Rubber Products	$ 71,980	$ 73,811	$ 72,011	$ 95,090	$ 87,196
GRAND TOTAL — All Products	$221,338	$220,086	$200,850	$300,189	$322,853

Crude Rubber Consumed—Long Tons

Products	3Q-30	2Q-30	1Q-30	3Q-29	3Q-28
Tires and Tire Sundries					
1 Auto and Truck Casings	50,540	70,430	61,642	69,220	72,065
2 Auto and Truck Tubes	11,425	13,887	12,384	13,813	15,426
3 Motorcycle Casings and Tubes	58	91	96	61	117
4 Bicycle Casings and Tubes	264	299	345	349	274
5 Aeroplane Casings and Tubes	29	19	15	66	55
6 Solid and Cushion Tires	959	1,089	1,577	2,175	3,488
7 All other Solid Tires	69	104	72	224	67
8 Tire Sundries and Repair Materials	1,009	1,153	1,149	1,152	1,681
TOTAL—Tires and Tire Sundries	64,353	87,072	77,280	87,060	93,173
Other Rubber Products					
9 Mechanical Rubber Goods	4,246	5,728	4,628	5,785	4,711
10 Boots and Shoes	2,846	3,750	4,944	4,873	3,906
11 Insulated Wire and Insulating Compounds	905	965	999	976	901
12 Druggist Sundries, Medical and Surgical Rubber Goods	431	423	318	545	433
13 Stationers' Rubber Goods	282	369	386	316	285
14 Bathing Apparel	85	222	254	103	64
15 Rubber Clothing	201	271	312	471	361
16 Automobile Fabrics	204	293	231	342	254
17 Other Rubberized Fabrics	750	417	471	709	831
18 Hard Rubber Goods	286	302	279	381	294
19 Heels and Soles	1,470	1,694	1,952	1,635	1,441
20 Rubber Flooring	272	303	261	285	299
21 Sporting Goods, Toys and Novelties	612	620	511	344	330
22 Miscellaneous, not included in any of above Items	1,498	821	655	821	884
TOTAL — Other Rubber Products	14,088	16,178	16,201	17,586	14,994
GRAND TOTAL — All Products	78,441	103,250	93,481	104,646	108,167

Trends in Tire Manufacture and the Rate of Replacements

Demands for Extra-Ply Balloon Casings Are Growing Rapidly—May Soon Be Used for Original Equipment—Trend Has Been Steadily Toward Quality—Improved Mileage Performance Delays Replacements

A VERY comprehensive survey of the trends on tire manufacture over the period of the last few years has been made recently by the Rubber Division of the Department of Commerce. At the same time the Bureau of Labor Statistics of the Department of Labor has compiled a table of index prices on tires over a similar period. Both studies are of interest in showing the trends and developments in the tire manufacturing industry and the trend in annual tire replacements.

Production of high pressure cord tires exceeded production of fabric tires for the first time in 1923; in 1926 balloon tires took the lead from high pressures, while fabric tires were rapidly disappearing from view, and in 1930, 6- and 8-ply passenger car balloon tires are becoming a constantly more important factor in the trade. The following table summarizes incomplete statistics of annual production of these types of automobiles casings as issued by the Rubber Manufacturers Association, Inc.

Pneumatic Tire Production—Thousands

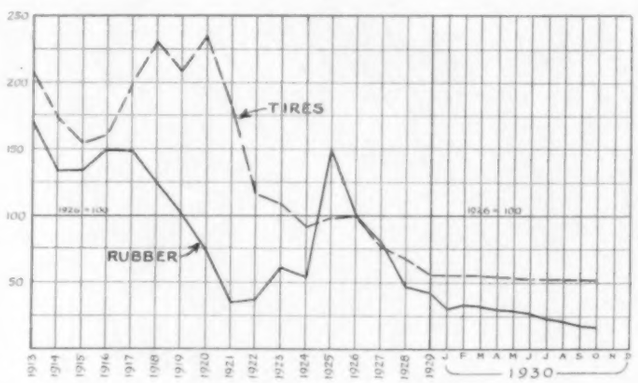
	Fabric	*High Pressure Cord*	*Balloons*	*Extra-Ply Passenger Car Balloons*
1922	15,765	14,933	.....	.....
1923	14,455	19,489	(a)	.....
1924	11,498	22,798	4,428	.....
1925	6,434	23,632	15,566	.....
1926	2,480	21,800	21,824	.....
1927	767	21,528	26,037	(a)
1928	277	19,285	31,489	7,389
1929	29	13,765	31,811	9,318
*1930	.....	*4,884	*18,198	*7,757

*8 months; (a) not reported separately.

This table furnishes a basis for thought in several directions. Cord tires were more durable than fabrics, and balloons of recent years have been superior to high pressure tires in mileage rendered. Extra-ply balloons are certainly longer-lived than ordinary balloons. The trend toward quality, forced by competition and public demand, goes on unremittingly, and requires consideration both in estimating replacement sales for the industry and in forecasting consumption of crude rubber.

Straightside tires were introduced as original equipment on new automobiles, and the same method, coupled with semi-balloons to replace high pressure tires without change of old rims, was followed in popularizing balloon tires. Extra-ply balloons are, however, being mostly introduced through renewal sales, few being sold for original equipment thus far. The growing acceptance of 6- and 8-ply balloons is shown by the fact that they constituted 36.7 per cent of all passenger car balloons sold for purposes other than original equipment in the first eight months of 1930, against 28.4 per cent for corresponding periods of 1929 and 1928, respectively. Public demand may become such that automobile manufacturers will adopt extra-ply balloons for original equipment, although their higher cost is a factor against this possibility.

Index Numbers of Average Prices of Crude Rubber and Automobile Tires, 1913-1930
(1926 = 100.0)



A less rapidly growing, but nevertheless increasing percentage of renewal sales of high pressure casings have also consisted of heavy-duty tires in the past year, confirming the general tendency of motorists toward higher quality tires in these tires of low tire prices.

This tendency helps to explain, in part, the extremely low tire renewal sales in 1930. If one were to assume that extra-ply balloons give one-third greater mileage than ordinary balloons, that the average car runs 7,000 miles per year and that the average mileage from ordinary balloons is 12,000 miles, the life of the ordinary balloon would be 1 5-7 years, and the life of the extra-ply 2 2-7 years. In four years running, an automobile on this basis would require replacements of only 1.75 extra-ply tires per year against 2.33 ordinary balloons.

The effect of a growing percentage use of higher quality tires is cumulative over a period of time. Taking the 1926 United States registrations as 1,000, indexes for other years would be: 1925, 907; 1927, 1,051; 1928, 1,112; and 1929, 1,205. Under the above assumptions these cars would normally come in for renewals 1 5-7 years later, on the average, if they were all using 4-ply balloons. Thus the 1925 registrations would all require renewals in 1927, 1926 registrations would require renewals in 1928, and so on. But in 1928 about 20 per cent of the renewals were 6-ply

balloons, in 1929 about 25 per cent, and in 1930 about 35 per cent, and such tires only require renewal in 2 2-7 years. In effect, therefore, a certain part of the cars have replacement requirements deferred to the third year instead of the second year. This effect is illustrated by the following table, so prepared as to emphasize the result of extra-quality tires in reducing annual average replacements per vehicle.

Year	Cars	Cars With Renewals Delayed	Cars Requiring Renewals	Rate Assumed Normal Renewal	Indicated Renewal Sales	Estimated Per Cent Extra-Ply	Renewal Sales Extra-Ply Tires	Cars With Extra-Ply Tires
1st	907	....	907	2.33	2,112	10	211	53
2nd	1,000	....	1,000	2.33	2,330	20	466	116
3rd	1,051	53	998	2.33	2,327	25	558	139
4th	1,112	116	996	2.33	2,320	35	812	203
5th	1,205	139	1,066	2.33	2,484	....	....	....

Because of delayed renewals resulting from use of improved tires, the indicated actual renewal sales per vehicle would work out:

	Cars	Sales	Per Vehicle
1st Year	907	2,112	2.33
2nd Year	1,000	2,330	2.33
3rd Year	1,051	2,327	2.21
4th Year	1,112	2,320	2.09
5th Year	1,205	2,484	2.06

The "assumed normal renewal rate" used above is used as a stable factor in this example, but it has, of course, actually been affected by the change from high pressures to balloons and the passing into limbo of fabric and clincher tires, as well as by the improved quality of balloon tires in recent years.

Tire Quality Delays Renewals

In effect the lengthened life of the better tires delays renewals until the third year instead of the second year on the basis of the above example, and this reduces annual replacements per car so long as the percentage use of the more durable tires continues to increase. The statistics above are not offered by the Department of Commerce as technically *accurate*, but as an indication of the trend of annual tire renewals accompanying the switch-over from first, second, and third-line tires, to super-quality, first and second-line tires. While statistics of tire renewals, plotted against automobile registrations and gasoline consumption statistics, show subnormal tire renewals in 1930, the possibility of other causes than business depression being partly responsible should not be overlooked, particularly since those causes appear likely to continue in operation.

Average of 9.38 Lbs. of Rubber Per Casing

The demand for rubber is naturally reduced by the lower unit sales of tires resulting from the trend toward higher quality, but not in direct ratio with the reduction in units. The extra-ply tires require more rubber per unit than ordinary balloons and this partly balances the effect of the reduction in units. Statistics of the Rubber Manufacturers Association show that 9.38 pounds of rubber per casing were required during the first nine months of 1930, against 8.74 pounds in the corresponding period of 1929, and this increase is partly because of the trend toward higher quality tires, although reduction in use of reclaims and other factors, such as the increased percentage of output consisting of truck and bus casings, contribute to this result.

A further thought in connection with the table at the beginning of this article is that if one judges probable future production of high pressure casings on the basis of the history of fabric tire production from 1925 onwards, the output of high pressure tires will be even less in 1931 than in 1930. Such increase in tire production as may be expected in 1931 must apparently consist of balloon tires, and the probability is that extra-ply balloons will that year supply a larger percentage of renewal tire sales at least. In estimating future tire production attention to the types of tires is as necessary as attention to the quantity of units.

The accompanying chart, based on the index figures of the Bureau of Labor Statistics, covering average prices of tires and crude rubber, is particularly interesting in that it shows a definite relationship between tire prices and the cost of crude rubber.

BUY NOW—Stock up with compounding materials at their present low prices.

Holland's Rubber Goods Industry

THE Netherlands rubber-manufacturing industry experienced a very good year in 1929, according to official production statistics. Ten factories were in active operation, employing 1,820 hands and consuming 1,166 metric tons of crude rubber and 833 metric tons of reclaimed rubber, with products valued at 7,336,000 florins. (The florin, at average rate of exchange, equaled $0.40 in 1929.) Pneumatic tires and inner tubes for bicycles were the largest single items manufactured in 1929, aggregating 2,345,000 and 1,541,000, respectively, having a combined sales value of 3,823,000 florins.

Value of Production, Total Sales, and Exports of the Netherlands Rubber Industry
(In florins)

Year	Production	Total Sales	Exports
1925	7,530,000	7,480,000	1,780,000
1926	6,910,000	7,220,000	2,250,000
1927	6,630,000	6,510,000	1,530,000
1928	6,810,000	7,030,000	1,530,000
1929	7,340,000	7,030,000	1,320,000

The year 1929 showed a rather important expansion of the rubber industry of the country, and the production of pneumatic tires and inner tubes for bicycles has reached the highest level ever recorded. No pneumatic automobile tires are manufactured in the Netherlands at present, the requirements being supplied by importation from the United States, Belgium, Great Britain, France, Germany, and Canda, named in their order of importance.

Production of Bicycle Tires and Tubes in the Netherlands
(Number)

Year	Tires	Inner Tubes	Year	Tires	Inner Tubes
1925.....	2,144,000	704,000	1928.....	2,098,000	1,134,000
1926.....	1,963,000	617,000	1929.....	2,345,000	1,541,000
1927.....	2,047,000	958,000			

The great majority of the rubber articles produced is sold in the domestic market, and local manufacturers have been successful in their endeavors to increase their sales in this market. Exports, on the other hand, show a gradual decline in value during the last few years, although their volume has increased.

The following table shows the consumption of crude and reclaimed rubber in the Netherlands over the last several years:

Domestic Consumption of Rubber
(Metric Tons)

Year	Crude Rubber	Reclaimed Rubber
1921	635	206
1922	763	223
1923	819	205
1924	878	377
1925	812	874
1926	592	1,199
1927	704	813
1928	851	977
1929	1,166	833

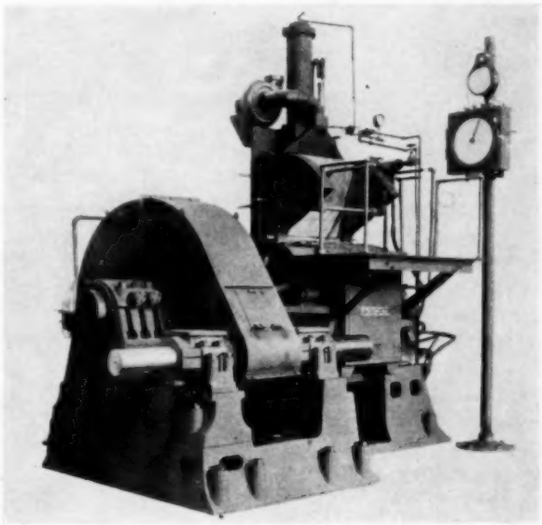
Performance of BANBURY MIXERS *on Tire Stocks*

Production From Five Banbury Machines Followed By Roll Mills for Sheeting Equals That of 16 Roll Mills Formerly Used—Cost Reduction of 33.9 Per Cent Results in Saving of $78,546 a Year

THE recent experience of a well-known tire maker affords an excellent illustration of the benefits to be had through replacement of obsolete general-purpose equipment with special machinery incorporating the latest refinements in the art of rubber manufacture. The plant in question formerly used a large battery of 84-inch roll mills for breaking down and mixing tire stocks, but has now divided this work between Gordon plasticators and Banbury mixer equipment supplied by Farrel-Birmingham Company, Inc. Four machines of the former and 13 of the latter type are now in use in different locations.

The tire manufacturing company does not wish to disclose its identity in connection with this report at this time, but welcomes a chance to make full facts available in the form of a Nielsen survey for the benefit of the industry as a whole.

This survey deals with the No. 11 Banbury mixers only, showing how one battery of five machines, supplemented by five of the former roll mills used for sheeting, is now doing work which originally required sixteen 84-inch mills. The cost reduction resulting from this change is approximately 34 per cent and the net annual saving by five machines is more than $78,000.00.



No. 11 Banbury Mixer, Showing the Feed Hopper of the Machine, the Operator's Platform, and the Recording Thermometer and Timing Device

Mixer Operation

The five Banbury mixers are installed side-by-side in a single row on an elevated platform erected for the purpose directly over a battery of five of the original 84-inch roll mills which were left in place for use in sheeting. The compounding room is on the floor above the mixers. This arrangement permits maximum use of gravity handling and has had a direct effect on the labor requirements. The five mixers are driven by a single 1,000-hp. motor and the sheeting mills have individual motors rated at 100-hp. each.

The normal schedule calls for 24-hour operation for six days per week or 300 days per year, and the machines are run continuously for periods of 144 hours each between the normal week-end shut-downs.

The recording thermometers, timing equipment, and all other mixer controls are located in the compounding room above the machines and the operators are stationed at that level. There are two men tending two machines apiece, and a third man devotes about half his time to the fifth machine and the remainder to supervisory duties over the entire battery. Five more men, making a total of eight, manage the sheeting mills on the main floor below the mixers.

Mixing procedure varies widely with the many different types of stock handled. Stock received from the plasticators goes in first in all cases and is allowed to soften thoroughly before other materials are added. The quantities of other materials and the exact time intervals for the addition of each are carefully specified for a wide variety of products. The automatic time indicators and temperature recorders obviate all chance for variation among successive batches of the same product and the supervisor reports no difficulty in holding operators to exact execution of the specifications.

Sulphur is usually added on the sheeting mills, as a matter of convenience and to avoid all chance of damaging the stock.

Batches vary over a wide range in size and mixing time. The maximum production of about 3,600 lbs. per hour is achieved on full 600-lb. batches put through in 10 minutes; at the other extreme are 337lb. batches requiring 14 minutes each on which production is at the rate of 1,350 lbs. per hour. The average batch is close to 400 lbs. at present and production per mixer is 1,600 lbs. per hour.

Contrasts With Former Methods

Production equal to the present average of 192,000 lbs. per day formerly required 24-hour operation on a battery of sixteen 84-inch roll mills, which did both mixing and sheeting. Batches ranged from 200 lbs. to 300 lbs.

*Survey made by A. C. Nielsen Company, Engineers, in collaboration with and approved by one of the largest manufacturers of tires.

TABLE A
General Data on Banbury Internal Mixers

	84" Roll Mills	Farrel-Birmingham No. 11 Banbury Mixers
Number of machines considered:		
Banbury Mixers, each with one roll mill	.....	5
Roll mills to do same work alone	16	.....
Total floor space for complete installation ..... sq. ft.	3,840	1,200
Production:		
Maximum per batch, per unit ..... lbs.	300	600
Minimum per batch, per unit ..... lbs.	200	337
Average per hour, per unit ..... lbs.	500	1,600
Average per hour, all units ..... lbs.	8,000	8,000
Temperature in Banbury Mixers:		
True (by user's test) ..... ° F.	.....	240
Indicated ..... ° F.	.....	180
Temperature of cooling water:		
In ..... ° F.	.....	60-75
Out ..... ° F.	.....	63-79
Hours operated per day	24	24
Days operated per year	300	300
Total daily production — 8,000 lbs. x 24 hours ..... lbs.	192,000	192,000
Power required — Average per unit from tests ..... hp.	85	225
Total kw.-hr. per day:		
85 x 16 x .746 x 24 hours ..... kw.-hr.	24,350	.....
225 x 5 x .746 x 24 hours ..... kw.-hr.	.....	20,140
Labor necessary:		
Operators and rates	16@$.74	2½@$.80
Inspectors	1@$.85	½@$.85
Sheeting Mill operators	.....	5@$.74
Investment data:		
Cost of each roll mills	$10,000.00	.....
Installation cost per mill	2,000.00	.....
Complete installed cost	$12,000.00	.....
Banbury units (5)	.....	$148,000.00
Mills @ $12,000.00 each	$192,000.00 (16)	60,000.00 (5)
Total investment cost	$192,000.00	$208,000.00
Depreciation period ..... years	13	13

TABLE B
Comparative Cost of Banbury Mixers Versus 84" Roll Mills for Mixing Rubber Stock

	Roll Mills	Banbury Mixers
Annual Fixed Charges:		
Depreciation per year (13-yr. life)	$14,769.23	$16,000.00
Average interest @ 6%	6,203.08	6,720.00
Repair and maintenance allowances	3,520.00	3,500.00
Floor space @ $.30/sq. ft./yr.	1,152.00	360.00
Total annual fixed charges	$25,644.31	$26,580.00
Daily Operating Costs:		
Pro-rate of fixed charges (300 days)	$85.48	$88.60
Power:		
Former 24,350 kw.-hr. @ $.01	243.50	.....
Present 20,140 kw.-hr. @ $.01	.....	201.40
Labor:		
Operators	284.16	48.00
Supervisors or inspectors	20.40	10.20
Operators on sheeting mills	.....	88.80
Compounding room costs:		
Former—$.60/M x 192,000 lbs.	115.20	.....
Present—$.38/M x 192,000 lbs.	.....	74.88
Trucking and handling cost—$.13/M	24.96	.....
Total daily operating costs	$773.70	$511.88
Unit Costs (based on an average of 192,000 lbs. daily):		
Costs per 100 lbs.:		
Fixed charges	$0.0445	$0.0461
Power	.1268	.1049
Operating labor	.1586	.0766
Compounding cost and handling	.0730	.0390
Total unit costs	$0.4029	$0.2666
Savings Effected:		
Per 100 lbs.—by difference		$0.1363 (33.9%)
Per day—by difference		$261.82
Per year—$261.62 x 300 days		$78,546.00

Net annual return on the investment of $148,000.00 is 53%.

each and the average output per mill was 500 lbs. per hour.

Floor space requirements for the 16-machine battery were 3,840 sq. ft.—3.2 times the present total.

The operating crew consisted of 16 machine-men and one supervisor—nine more than are now required—and labor costs for the same output were 207 per cent of the present amount.

Power requirements formerly totalled 24,350 kw.-hr. a day compared with 20,140 now—a difference of nearly 21 per cent.

The user is without sufficiently detailed data to show improvements in the product delivered but is confident such differences exist. No attempt has been made to take advantage of the opportunity to use raw materials of lower quality and any gain made through better mixing is freely passed on at no extra cost to the ultimate user.

Measurable gains have been made, however, in material handling and compounding costs. A handling operation whose cost appears in the records as $.13 per thousand pounds has been done away with entirely. Compounding costs, largely because of the advantages of handling larger average batches, have been cut from $.60 to $.39 per thousand pounds, a gain of $.21 or 35.0 per cent.

Another marked contrast between former and present methods is that carbon-black is now closely confined within the Banbury mixers and does not escape, to result in unhealthful working conditions and high maintenance costs on other equipment. The latter point has not as yet been proven, but the maintenance men report that they can already see evidence of less bearing trouble. The user had not expected that there would be material developments along these lines during the first eight months of use.

Comparative Mixing Costs

Table A, accompanying this survey, summarizes the basic operating data detailed in preceding sections and will be found largely self-explanatory.

Table B shows a detailed calculation of mixing costs for roll mills and Banbury mixers. The total investments shown in Table A are used in Table B for the calculation of annual fixed charges based on the user's standard allowance of 13 years for such equipment. Repairs and maintenance are amply covered by suitable allowances and floor space charges are figured at $.30 per sequare foot annually. The totals of these four items are reduced to the per-day basis for the full 300-day schedule, showing $85.48 and $88.60 for roll mills and mixers, respectively.

Other daily cost items include power, labor, compounding room costs, and the former charge for trucking and handling. Daily totals appear at $773.70 and $511.88 for mills and mixers, respectively.

Unit mixing costs derived from the daily totals mentioned above amount to $.4029 and $.2666 per hundred pounds of material handled by former and present methods. The reduction creditable to the use of Banbury mixers is $.1363 per hundred pounds (33.9 per cent) and the net daily saving appears as $261.82. The net annual saving is $78,546.00 and the figures indicate that the initial investment of $148,000.00 in five Banbury mixers is earning a net return of 53 per cent per year.

Indian Labor Leaving Malaya

ACCORDING to the *Straits Times*, nearly every estate in Malaya is reducing its labor force as a result of increased tasks given to individual tappers, and between 15 per cent and 20 per cent of the usual labor force is being discharged on most estates. The total Indian labor population in Malaya on June 30, 1930, was about 318,000. The number of Indian laborers repatriated between January and August was 5,107, in August the number sent back to India was 5,865, and between September 1 and 24 the total was 16,202.

Balloon Caricatures of the Comic Strips

R. H. Macy & Company's Unique Thanksgiving Day Parade—Balloons Designed by Tony Sarg—Manufactured by Goodyear

A Rubberized Fabric and Helium Replica of Mrs. Katzenjammer, of Comic Strip Fame

FOLLOWING their usual Thanksgiving Day custom, R. H. Macy and Company staged an amusing and unique parade down Broadway, New York City, this year, featuring huge balloons constructed to represent various well-known caricatures of the comic strips. The balloons, as in former years, were the product of the balloon department of the Goodyear Tire and Rubber Company, Akron, O., and were designed and painted by Tony Sarg. Among others, the balloons depicted the members of the Katzenjammer family, Boob McNutt, Barney Google and various Toonerville folk. Upon arrival of the parade at the Macy store, the 15 huge feature balloons were released, each bearing an order for $25.00 payable to the finder. Over 2,500 small balloons were also released along the line of march, much to the delight of the youthful spectators.

Process of Manufacture

Many interesting factors enter into the manufacture and operation of these huge caricature balloons. Figures must first be drawn which lend themselves to special balloon manufacture and after approval by R. H. Macy and Company, the drawings or sketches must then be translated into working drawings, which are to be used in the actual manufacture of the balloons. These working drawings must of necessity consist almost entirely of curves, spheres, cylinders and pear-shaped figures in very many forms and adaptations, because only these figures can be successfully made into rubberized fabric balloons that when inflated will retain their desired shapes.

After the working drawings are made it is necessary to make individual patterns for each of the many pieces of fabric which go into the manufacture of each operation and of each figure. After the patterns have been cut with mathematical precision to avoid wrinkling or puckering of the fabric, the fabric itself is cut to the desired shapes and sizes.

The figures are then assembled by cementing them together in the proper manner with very high grade airship and balloon cement, which must be applied to the extent of at least four coats on each piece before the pieces are joined together. All of this work is done with the figure turned inside out in order that seams of maximum smoothness may be the only ones appearing on the outside of the figure. After the figure is completed it is inflated to determine how closely it resembles the original sketch and if changes are necessary they are made by recutting or reshaping the figure.

When the shape of the figure is satisfactory, it is again turned wrong side out and thoroughly "doped" to assist the fabric in resisting to the greatest degree possible the normal diffusion of the gas, with which it is to be inflated. After the "dope" has dried a sufficient number of hours, the figure is once again turned wrong side out; the rip panel, or long slit, by means of which it is possible to invert the figure at will, is permanently closed and the figure is then air inflated for its final diffusion test before painting.

The amount of gas required varies directly in proportion to the size of the figure and the figures must in every case be large enough so that the total lift of the gas in each will provide adequate useful lift over and above the weight of each figure and the handling lines attached to it.

Helium Gas Used Exclusively

Helium gas is used exclusively in order to assure maximum safety to the millions who witness this famous parade, because of its non-combustible, non-inflammable and non-explosive character. Helium for this parade was obtained from the Thatcher, Colorado, helium district in commercial bottles, or cylinders, containing approximately 190 cubic feet each of helium gas. Helium has slightly less lift than hydrogen, but the disadvantage of lower lift is many times offset by the absolute safety, which is so essential for parade purposes.

Most of the balloons are so huge that it is necessary to pull them down very close to the street or to tip them over on their sides when passing underneath the one or two elevated structures on the line of march. This special handling is accomplished by means of handling lines attached at the proper places on the figures.

At the conclusion of the parade the balloons were again this year released in front of the main entrance of the Macy store and sailed away at a speed and in a direction determined entirely by the velocity and direction of the wind.

Dealers' Stocks of CANVAS RUBBER SOLED FOOTWEAR *Show Gain*

Average Increase in Inventories Amounts to 20 Pairs Per Dealers—Gain Shown Principally in Low Price Lines—Number of Dealers Reporting is Less Than Last Year—Total Stocks Reach 2,685,889 Pairs

THE second annual survey of dealers' stocks of tennis shoes has been completed by the Rubber Division of the Department of Commerce. The term "tennis shoes," as used in this survey, embraces practically all classes of canvas-rubber soled footwear, including gymnasium, basketball and other sport or utility shoes of canvas or other cloth uppers and rubber solings.

Reports received from a total of 18,200 dealers, covering the entire United States, show the total stocks of canvas rubber-soled shoes, as of November 1, at 2,685,889 pairs, or an average of 147.6 pairs per dealer. In the survey last year, 20,948 dealers reported stocks on hand of 2,661,897 pairs or an average of 127.1 pairs per dealer. It would appear, therefore, that stock inventories in dealers' hands have increased this year by 20.5 pairs per dealer.

In the present survey, as in the similar survey made as of November 1, 1929, dealers were asked to report their stocks of tennis shoes under various price ranges, which are indicated in the accompanying tables. By way of comparison, figures for both years are given in the tables. The survey shows that the average stock of 147 pairs comprised roughly 57 pairs costing the dealer less than $0.75 per pair; 38 pairs costing $0.76 to $1.00; 29 pairs costing $1.01 to $1.50 each; 16 pairs costing above $1.50 and 7 pairs of special oxfords and pumps. From comparative figures it would appear that the increase in dealers' inventories was in the cheaper grades.

A separate tabulation was made in the present survey for those firms whose stocks of tennis shoes amounted to more than 500 pairs each. In the present survey there were 539 dealers in this group, having a total of 971,890 pairs of tennis shoes or an average of 1,803 pairs, compared with 487 dealers having 742,290 pairs or an average of 1,524 pairs on November 1, 1929.

The total mailing list used in this survey consisted of 117,000 names. In addition to the 18,200 reports submitted by dealers with stocks on hand as of November 1, 1930, reports were received from 7,334 dealers stating either that they no longer sold tennis shoes or that they had no stocks on hand at the present time. The Post Office Department returned 1,750 envelopes addressed to dealers owing to failure to locate or because of improper address.

TOTAL REPORTED STOCKS, SHOWING AVERAGE PAIRS PER DEALER

November 1, 1930

Cost Price per pair to Dealer	*No. of Dealers Reporting*	*Number of pairs*	*Average per dealer Pairs*	*Percentage of Total Dealers Per Cent*	*Percentage of Total Stocks Per Cent*
Up to 75c	13,612	1,037,754	76.2	74.8	38.7
76c to $1.00	14,533	687,277	47.3	79.9	25.6
$1.01 to $1.50	12,638	524,726	41.5	69.4	19.5
Above $1.50	8,519	301,823	35.4	46.8	11.2
Specialty Oxfords and pumps	2,912	134,309	46.1	16.0	5.0
Total	18,200	2,685,889	147.6	100.0	100.0

November 1, 1929

Cost Price per pair to Dealer	*No. of Dealers Reporting*	*Number of pairs*	*Average per dealer Pairs*	*Percentage of Total Dealers Per Cent*	*Percentage of Total Stocks Per Cent*
Up to 75c	15,490	948,708	61.2	73.9	35.7
76c to $1.00	15,900	652,992	41.1	75.9	24.5
$1.01 to $1.50	14,483	604,050	41.7	69.1	22.7
Above $1.50	9,867	357,544	36.2	47.1	13.4
Specialty Oxfords and pumps	2,419	98,603	40.8	11.5	3.7
Total	20,948	2,661,897	127.1	100.0	100.0

LARGE STOCKS OF FOOTWEAR, BY STATES

(Including only dealers with over 500 pairs in stock)

	No. of Dealers	*No. of Pairs*		*No. of Dealers*	*No. of Pairs*
Alabama	6	7,515	Nebraska	3	2,399
Arizona	2	1,520	Nevada	—	—
Arkansas	4	6,099	New Hampshire	3	2,060
California	30	122,821	New Jersey	22	15,552
Colorado	3	2,352	New Mexico	—	—
Connecticut	11	9,761	New York	86	141,469
Delaware	2	2,032	North Carolina	4	2,562
Dist. of Col.	5	2,908	North Dakota	—	—
Florida	6	13,215	Ohio	30	89,683
Georgia	6	17,091	Oklahoma	3	2,393
Idaho	—	—	Oregon	3	5,088
Illinois	22	56,801	Pennsylvania	60	68,883
Indiana	10	16,191	Rhode Island	3	4,006
Iowa	9	9,165	South Carolina	5	10,581
Kansas	5	4,619	South Dakota	2	1,475
Kentucky	9	9,278	Tennessee	9	21,786
Louisiana	6	4,600	Texas	14	23,653
Maine	11	10,644	Utah	3	2,734
Maryland	9	12,294	Vermont	4	3,477
Massachusetts	34	69,334	Virginia	6	4,697
Michigan	16	11,053	Washington	6	4,031
Minnesota	15	25,496	West Virginia	7	15,377
Mississippi	5	4,331	Wisconsin	9	7,475
Missouri	23	117,352	Wyoming	1	884
Montana	2	1,479	Unallocated	5	3,674
			Total	539	971,890

STOCK OF AVERAGE DEALER

Cost price per pair to Dealer	*Number of pairs on November 1st* 1929	1930
Up to 75c	45	57
76c to $1.00	31	38
$1.01 to $1.50	29	29
Above $1.50	17	16
Specialty Oxfords and Pumps	5	7
Total average dealer stock	127	147

BUY NOW—New mechanical equipment such as conveying machinery, control instruments, pyrometers, etc., have been developed during the past year. Install them as substitutes for your obsolete equipment and increase your plant efficiency.

The Use *of* Rubber *in* Cement Tiling

New Field Rapidly Opening Up in Paving Construction—Many Modern Art Designs Possible—Care Should be Exercised in Properly Grooving Rubber Strips Into the Cement Tile—Tiles Should be Reinforced

By GEORGE RICE

COLOR cement handicraft, which heretofore has been limited chiefly to vases, book ends, Mosaic tiles, garden pottery and ornamental objects for interior decoration and architectual use, promises to be extended to another field as a result of the use of rubber strips in cement tiling to prevent slippage of persons on floors and vehicle tires on the streets. The employment of a few strips of rubber in the body structure of decorated cement tiling on the floors of stores, residences and public buildings for the purpose of affording a gripping point for shoes on an otherwise smooth and glassy surface is not new. There are often slopes to floors which are covered with these kinds of ornamental tiles which are dangerous to walk upon unless provisions are made to prevent slipping. Recesses are cut into the tile, while the cement is still soft, and rubber strips inserted, the surfaces of which are a little higher than the level of the tile so as to allow for wear and at the same time present a substance for the soles of leather, rubber and cloth footwear to temporarily adhere to.

So long as the idea was confined principally to floor artistry, the consumption of rubber stock was not large. But recently some very successful efforts to utilize the rubber strips in road tile for the general use of automobile traffic has altered the situation. Not only is an effective non-slipping tile obtained when rubber strips are used, but ornamentation of a unique character also results, because the rubber can be colored and inserted into the tile in geometric or other types of forms in an artistic manner.

In Los Angeles, California, the sloped and sometimes the level entrances to service stations were beautified with cement tile in which colored rubber ornamentation had been placed for the purpose of eliminating slipping troubles. One manager asserted that the flagging with its attractive rubber inserts was good publicity and had increased his business.

Rubber is Keyed in and Tiles Reinforced

Cement tile with rubber inserts intended for road use has to be constructed stronger than the same type of tile intended only for store or home flooring or for garden walks. There are the heavy trucks to be considered as well as high speeded autos. And often the speed of the lighter cars is more wearing on flagging than the heavy trucks. A strip of rubber or any pliable substance, set with straight edges into a cement cavity will be peeled out by the suction of rubber tires very quickly, even if it is held with a cementing substance. But if that strip is dovetailed into the cavity, no amount of pull will release it. The tile will have to be smashed to get the strip out. This is the basic principle in the success of the rubber-cement tiling for roads on which the traffic is heavy and fast.

The beginning of the construction of rubber-cement tiling for road service is in the modeling of a plaster mold, as shown in Figure 1. Regular molding plaster is used and this is mixed with water to the consistency of molasses and is then poured in a molding form built up with side or retaining bars of wood. These bars can be held in place with putty or they can be nailed at the corners.

Before the cast model of plaster gets hard, it is incised

Fig. 1
A Plaster Mold Is Made and Incised with Grooves to Conform with the Requirements of the Rubber Inserts

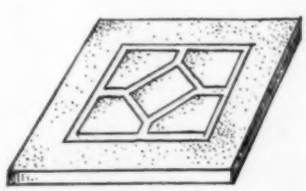


Fig. 2
After the Grooves Are Cut Out in the Form of a Design, the Plaster Cast Becomes the Model for the Cement Tiles

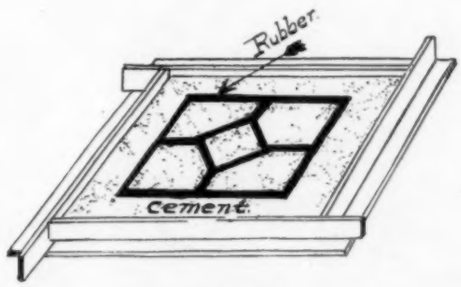


Fig. 3
The Cement Tiles Are Cast from the Plaster Model and the Rubber Solution Is Poured into the Grooves

by a cutting tool with grooves, to receive the rubber strips in the quantity lot of cement tiles which later on will be made from this original model. Just plain paralleling grooves can be made for a plain design, but modern art motifs are now applied to road tile as well as to floor tile, so that usually a form of ornamentation is used, such as shown in Figure 2.

Casting the Cement Model Tile

The cement model tile is next made with neat cement, the plaster model being used face up in the molding form, thus resulting in the casting of a cement tile with the grooves in relief. This tile becomes the permanent model from which to cast the tiles in quantity lots, as its relief lines will produce the required grooves. The rubber is then poured into the grooves of the tiles, and when thus far along in the process, the mold gives an appearance as shown in Figure 3.

Fig. 4
Showing Three Wrong Ways of Filling the Grooves in the Tiles with Rubber on the Majolica Plan

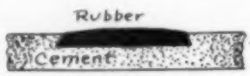


Fig. 5
Showing the Right Way of Inserting the Rubber to Make It Fast

The shape of the grooves has much to do with the retention or the loosening of the rubber. Figure 4 shows three wrong ways of placing the rubber in position. The rubber strip at the extreme left in this cross-section view of a rubber-cement tile rests upon an oval bottom, and is devoid of any fastening properties. A strip thus placed will not hold under the stresses of wheel action. Nor will a strip of rubber placed into a groove in which the sides of the groove slope outward towards the top, as shown in the middle example, hold its position very long as the sloping edges do not have the retaining qualities to hold the rubber down against the pull of traffic. Rubber strips set into a shouldered groove like that shown at the extreme right in the same drawing are more securely held in place, but still not firmly enough for hard service.

The Majolica Method

The so-called Majolica plan of inserting a second substance in strip form into the grooves of a first substance is used, and when this first substance, which in the case of the rubber-cement tiles is cement and the second substance is rubber, the rubber stripping is locked into place in the grooves by the simple process of dove-tailing or V-shaping the sides of the grooves so that the edges of the rubber strips will conform to this shaping and become securely wedged into place, as shown in the cross section of a tile thus fitted in Figure 5. This method of keying the rubber strips into position prevents them from loosening and coming out.

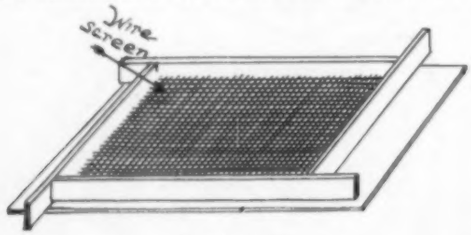


Fig. 6
The Tile Is Reinforced with a Wire Screen Backing, If It Is To Be Used for Streets, So as to Make It Resistant to Stresses

Reinforced Concrete Used for Street Paving

When the tiles with the rubber inserts are used for floors or walks about the home, reinforcing is not essential owing to the comparative light service. But for road service the base material not only has to be concrete, containing a liberal percentage of sand and gravel, but further resisting properties are obtained by the use of reinforcing wire screening, which is forced into the back of the tile while the concrete mixture is still soft, as shown in Figure 6.

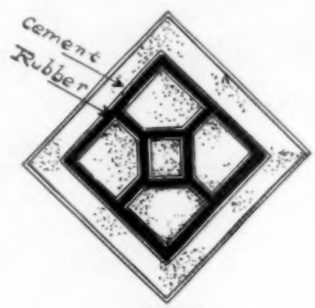


Fig. 7
The Finished Cement Tile with Its Rubber Inserts to Prevent Slipping, Produced in a Modern Artistic Design

Ordinarily, for road work, the rubber strips are placed in the tile surfaces with the view of getting a maximum of efficiency from them, and decorative work is not in mind. But it has been found that the maximum of efficiency can be obtained as completely if an attempt at ornamentation is made. One of the popular designs worked out is shown in the completed tile in Figure 7.

BUY NOW and enjoy increased profits on your stock inventory values as the upward swing in business develops.

Revisions of Tire Fabric Standards

IMMEDIATE revisions of the standard specifications for tolerances and test methods for tire fabrics other than cord fabrics (D-122-27) and for tolerances and test methods for cord tire fabrics (D-179-27) based on recommendations of Committee D-13, have also been approved by the American Society for testing materials. These two specifications have been revised to conform to present day methods of testing and handling of tire fabrics. It is safe to say that these methods are being used by 90 per cent of the industry. The committee is continually in touch with new developments, and just as fast as new methods are devised they will be added to these specifications. Copies of these revised specifications may be purchased from C. L. Warwick, secretary-treasurer of the American Society for Testing Materials, 1315 Spruce Street, Philadelphia, Pennsylvania. They are also incorporated together with other standards issued by the society in a single "Textile Pamphlet," copies of which may also be secured upon application to the above address.

Committee D-13 held its regular fall meeting at the Massachusetts Institute of Technology, Cambridge, Mass., October 16 and 17. The tire fabrics committee is planning to draw up specifications for enameling ducks and leno breaker fabrics. The committee on hose and belt ducks is working on specifications for hose ducks to be followed by belting ducks.

Di-Esterex-N—A New Accelerator

A NEW accelerator is being offered to the rubber manufacturing industry by the Naugatuck Chemical Company, 1790 Broadway, New York City, under the trade name Di-Esterex-N. The following information has been supplied by its manufacturer.

Di-Esterex-N is a combination accelerator of the ester and guanidine type. The material is a pale yellow powder with specific gravity of about 1.24. It disperses easily and quickly in crude or reclaim and has not been observed to bloom from either the uncured stock or finished goods.

This accelerator possesses the general charactertistics of the ester class of material, functions at low or high temperatures, gives tight cures of high tensile and great wear resistance. Stocks containing Di-Esterex-N become softer with continued milling and the softeners in a stock should be regulated so as to allow for this effect of the accelerator. This softening effect is a little less than that of Ureka. Footwear stocks that receive an extra amount of milling are of course most in need of adjustment of softener.

While Di-Esterx-N can be termed a very good general purpose accelerator it seems of special merit in certain places. For footwear, especially gaiters or rubber surface goods, this accelerator is very desirable. This is because of the ability to give relatively short air pressure cures at 250-260° F. that have very dry, hard, firm surface. The hard dry surface results in a bright attractive appearance and desirable feel. The flexing qualities of carcass stocks and the high abrasion resistance of loaded stocks accelerated with Di-Esterex-N should be of interest to the tire and mechanical goods manufacturers.

BUY NOW—Lots of your plant equipment needs replacements.

Thiokol—A New Sheet "Rubber"

A NEW material which is meeting with considerable favor among the rubber specialty and wire and cable manufacturers, has been introduced by the Thiokol Corporation, Yardville, N. J., which recently acquired the plant formerly owned by the ZeeZee Rubber Company, at that place. The material is being sold under the trade name of "Thiokol."

The product is produced in crude sheet form, which corresponds in appearance to crude rubber sheets. The material is elastic, having most of the physical characteristics of rubber, but chemically it is not rubber.

The process of manufacturing it in the finished articles is practically identical to rubber, no new machinery being required. It is compounded on the mill, can be tubed, calendered, pressed and molded and must be vulcanized.

In addition to its unique physical characteristics, it is oil-proof and proof against all ordinary rubber solvents and practically all other solvents; unaffected by most acids; entirely unaffected by atmospheric oxidation even in direct sunlight; also corona-proof.

The material has been introduced to the rubber and electric wire and cable industry over the past year and several of the leading manufacturers, such as Manhattan Rubber Division, Johns-Manville Corporation and others are now in production on certain products.

The product has been in the development stage over the last 6 years, having been invented by Dr. J. C. Patrick of Kansas City, Missouri, who is now associated with the company as vice-president and director of research.

The Thiokol Corporation was incorporated for the development and sale of this product in January, 1928, and offices and laboratory and experimental plant were located in Kansas City until November 8, at which time the move was made to Yardville.

BUY NOW—Some of your molds are old. Replace them now before business picks up. Save any interruption in your future production schedule by making the change now.

London Picture Theater Instals First Rubber Screen

THE use of motion picture screens made of rubber has solved one of the biggest problems created by the talkies—that of how to obtain effective sound reproduction without sacrificing anything in the quality of the actual presentation of the picture itself. The Stoll Picture Theater, London, formerly Oscar Hammerstein's London Opera House, has just installed the first rubber screen in the United Kingdom.

The effect was instantly noticeable. The clearness of the pictures proves so much greater than that given by the old screen that at times an almost stereoscopic effect is achieved, and the improvement in the reproduction of the voice is as great as the improvement in the picture. The screen is made of thin sheet rubber, with a pure white surface, and is perforated with thousands of small holes, each about 1-32 of an inch in diameter, numbering roughly 100 to the square inch. Looked at from the front of the house the new screen appears to have a uniform surface and to be quite opaque. From the stage, however, every detail in the auditorium is clearly visible through it.

Voices from the loud speakers—which are behind the screen—have thus direct access to the audience.

In a public test of the new screen at the Stoll Picture Theater, extracts of films, selected because of the range of the voices and instruments recorded, were given on the new and old screens as a comparison. Not only were the pictures on the rubber screen better in detail, but violin notes, entirely lost in the old screen, came perfectly through the new, and it was noticeable that there was a marked individuality in the voices when the new screen was used.

The new screen is fireproof and thus acts as a second safety curtain. The old screen, made of three-ply composition, had to be taken down at frequent intervals for cleaning, but the new one can be cleaned in a few minutes with a damp cloth.

BUY NOW—New mechanical equipment such as conveying machinery, control instruments, pyrometers, etc., have been developed during the past year. Install them as substitutes for your obsolete equipment and increase your plant efficiency.

Firestone Bank in Liberia

ESTABLISHMENT of the first American bank in Liberia was announced recently by Harvey S. Firestone, Jr., vice-president of the Firestone Tire and Rubber Company. The bank has been designated as the official depository of the Republic. The new institution becomes a part of the United States Trading Company, a Firestone subsidiary, and is located in Monrovia, the capital of Liberia.

The new bank will be managed by Peter Davidson, who for the past 20 years has been connected with the foreign service of the National City Bank of New York.

EDITORIAL COMMENT

BUSINESS NEURASTHENIA

THE doctors tell us that neurasthenia is simply a "derangement of the nervous system with depression of vital forces"—largely if not wholly induced by a mental condition, and that nothing organic is wrong nor is the constitutional structure of the body diseased. This pathological term can be aptly applied to the present state of business. It has an attack of neurasthenia. There is nothing wrong with the business structure. Its condition is purely mental, induced by an environment of pessimism and too much bad association with fear and timidity.

This psychological condition is now recognized by the best business diagnosticians of the country. President Hoover, in his message to Congress on December 1, urged the dissipation of this business neurasthenia when he said:

"In the larger view the major forces of the depression now lie outside of the United States and our recuperation has been retarded by the *unwarranted degree of fear and apprehension* created by these outside forces."

John E. Edgerton, president of the National Association of Manufacturers, in a recent address, following the same line of diagnosis, said:

"The situation now is dominated primarily by a mental condition. That mental condition has been produced by *fear*, the most destructive force ever known to man."

The finest prescription for this business neurasthenia can be found in the campaign afoot to BUY NOW. Develop BUYING COURAGE.

To the rubber manufacturing industry, THE RUBBER AGE sends this message:

"If you want to re-vitalize your business, do it NOW with the least interruption to your production schedule and at extremely favorable economic costs. BUY NOW. *Rehabilitate your plants—Purchase some new equipment—Replenish your stocks of raw materials and other supplies.*"

The RUBBER AGE

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

PIONEER RUBBER COMPANY REACHES HIGHEST OUTPUT

The Pioneer Rubber Company, Willard, O., is now turning out more balloons than ever before in the history of the factory. The plant, since resuming full operations after the partial shutdown for the installation of new machinery, has been running with full force two nine-hour shifts, and the highest single day's production was recently reached when 484 units of balloons were produced.

The improved equipment and the new process have cut down the number of operations from eight to two, and where a room full of men or girls handled a single operation one or two can now do the work. However, the number of employes is higher than ever before, due to the higher output, and prospects are that the plant may later go on three eight-hour shifts and add more workers. In the dipping room old machines, which required hand labor and which were costly in use of material, have been replaced by new machines that are high speed, nearly automatic, economical, and capable of turning out a nearly perfect product with uniform regularity.

The same is true in the stripping department, while new methods of coloring have also been devised. The new processes and machinery designs were worked out by the Pioneer's own employes, and all special equipment was built in the company's own machine shop.

PEERLESS BUYS PART OF AMERICAN RUBBER PLANT

The Peerless Cement Company, Holbrook, Mass., has purchased a part of the plant of the American Rubber Company at Stoughton, Mass., and will occupy the premises as soon as renovations have been completed. The Peerless Company manufactures rubber cement, waxes and shoe blacking for the rubber and hose industries.

The New Haven railroad has commenced work on extending a siding to be used by the company. Renovations will take about two months, after which machinery from Holbrook will be installed.

Turbo-Mixer Representative

The Turbo-Mixer Corporation, New York City, has appointed the Western Engineering Company, San Francisco, Cal., as its representative in the section of California north of the Tehachapi Mountains.

Hammill & Gillespie Warehouse

Hammill & Gillespie, Inc., New York City, importers and grinders of white minerals and earth colors, announce a new Manhattan warehouse "service" at Brooklyn Bridge Arch, 14 Frankfort street.

Zee Zee Factory Leased

The plant of the Zee Zee Rubber Corporation, Yardville, N. J., has been leased to the Thiokol Corporation of Kansas City, Mo., which will close its western factory. The Thiokol Corporation manufactures "Thiokol," which is said to have the physical properties of rubber, and which is now being sold in crude sheet form to cable makers and other rubber manufacturers. Fred R. Sayen, treasurer of the Mercer Rubber Company, Trenton, N. J., is interested in the Thiokol Corporation and was instrumental in the lease of the New Jersey factory.

RUBBER CHEMISTS FORM TEP-TER CHEMICAL CO.

Announcement has been made of the formation of the Tep-Ter Chemical Service Company, Inc., with plant and laboratories at Wayne, N. J. The organizers are W. P. ter Horst and Jan Teppema, both of whom are well known in the rubber industry. The activities of the company will include the manufacture of a line of rubber chemicals and other special materials for related industries.

Mr. ter Horst has been connected with the United States Rubber Company laboratories at Passaic, N. J., for the past few years, previous to which he was with the Rubber Service Laboratories Company at Nitro, W. Va. His main activities have been in the development of accelerators and anti-oxidants. He is a graduate of Zurich University and most of his rubber technical experience has been gained with various companies in the United States.

Mr. Teppema was until recently on the technical staff of the C. P. Hall Company, Akron, O., previous to which he had been in the research laboratories of the Goodyear Tire & Rubber Company. He was educated in Holland and was graduated from the Universities of Amsterdam and Leyden, receiving the degree of Ph.D. in organic chemistry from the latter institution. Mr. Teppema has had extensive experience in organic chemistry and in the development of rubber accelerators and anti-oxidants.

RUBBER MEN TO ATTEND SHOP METHODS MEETING

Several industrial engineers of rubber manufacturing companies will attend the Shop Methods Conference to be held at the William Penn Hotel, Pittsburgh, Pa., on December 11 and 12 under the auspices of the American Management Association. The morning program on December 11 will feature an introduction to shop methods, and the afternoon session will discuss organizing for shop methods activities. At 6:15 P. M. there will be a dinner meeting at which P. L. Dildine, manager of the factory standards department of the B. F. Goodrich Company, will talk on "The Viewpoint of Shop Methods Men." Mr. Dildine is vice-president in charge of the Shop Methods Division of the American Management Association.

The sessions on December 12 will be devoted entirely to the subject of process development. A. L. Kress, manager of the industrial engineering department of the United States Rubber Company, will preside.

PACIFIC GOODRICH MAKES PUNCTURE-PROOF TUBES

Manufacture of the new "air container," puncture sealing automobile tire inner tube developed by the B. F. Goodrich Company, began in the Pacific Goodrich Company plant at Los Angeles, December 1.

The additional manufacturing unit is warranted by national acceptance of the new tube. Production will be increased as business in that district commands.

All western markets and exports for the Orient will be supplied from the new California unit.

The Pacific Goodrich plant will be the first outside of Akron to manufacture the new product. The main factory in Akron has been in production a year and has supplied all markets.

New Clay Distributing Firm

The firm of Howell & Murchison, Inc., has been formed with headquarters at 230 Park Avenue, New York City, to act as sales representatives for the Georgia Kaolin Company, producers of Cherokee water-washed and air-floated clay. The new firm is headed by R. W. Howell and David Murchison, formerly of the R. T. Vanderbilt Company.

H. A. HOFFMAN NOW WITH ROESSLER & HASSLACHER

H. A. Hoffman, formerly with the B. F. Goodrich Company, and more recently chief chemist of the Mason Tire & Rubber Corporation, has joined the technical organization of the Roessler & Hasslacher Chemical Company.

After spending several years in the laboratories of Eli Lilly & Company of Indianapolis, he joined the technical staff of the B. F. Goodrich Company in 1910, and has had a long and varied experience in compounding and developing all kinds of rubber goods. At Goodrich he had charge of various divisions of the development department, including the raw materials division. This division was concerned in the development, selection and practical application of rubbers, reclaims, pigments and chemicals for use in the plant, and was also in close touch with the commercial angles pertaining to crude rubbers and rubber compounding materials.

Mr. Hoffman was born and educated in Indiana, but since 1910 has lived near Akron and is well known in technical circles in that vicinity. He will act as a technical representative of the Rubber Division of the Roessler & Hasslacher Chemical Company in the Akron and midwestern districts.

New Kelly-Springfield Agency

The advertising of the Kelly-Springfield Tire Company will in the future be handled by Hommann, Tarcher & Sheldon, Inc., New York City advertising agency.

The Crescent Insulated Wire & Cable Company, Trenton, N. J., has placed about 400 hands at work during the past few weeks. The company is extremely busy at the present time and has many orders on hand.

Imperial Rubber Moves

The Imperial Rubber Company, distributor of mechanical rubber goods, piston and sheet packings, rubber tile and plumbers' rubber goods, moved on December 1 to new quarters on the eighth floor of the Terminal Commerce Building, 401 North Broad street, Philadelphia, Pa. The firm was formerly located at 44 North Fourth street.

Auto Show Opens January 3

More than 100 exhibitors of accessories, parts, sundries and shop equipment will show their latest products at the 31st annual National Automobile Show in Grand Central Palace, New York City, from January 3 to 10 and at Chicago from January 24 to 31. Combined with 54 makes of complete passenger cars, commercial vehicles and taxicab models, the aggregation will be most complete and representative of the industry. Thus far the only tire manufacturer scheduled to exhibit is the Custom Built Tire Company, New York City, which will show its Martin tires at the New York show.

D. H. OWEN COMPANY BUYS TRIANGLE RUBBER PLANT

The factory of the Triangle Tire & Rubber Company, Canton, O., which has been closed down for several months, has been acquired by the D. H. Owen Company which will manufacture a line of rubber garden hose and household accessories there. D. H. Owen, long identified with the manufacture of rubber accessories at Akron, heads the company.

The Triangle Tire & Rubber Company was incorporated in 1923 and had a capacity of about 120,000 tires annually, in addition to which it also manufactured garden hose and a few mechanical rubber items. It has been attempting to liquidate its assets since last spring.

FINANCIAL ADVERTISING FEATURES RUBBER TRADE

In a full-page advertisement in the *United States Daily* on October 29, Halsey Stuart & Company, Inc., of New York and Chicago, discussed the growth and importance of the domestic rubber manufacturing industry. Under the readline, "Cushioning the Wheels of Progress," the advertisement traced the history of the industry and showed graphically its growth as measured by gross imports of crude rubber and the distribution of manufactures by amount of rubber consumed.

"The financial requirements of the rubber industry reflect quite directly the conditions under which the rubber manufacturers find it necessary to operate," this investment banking house says, pointing out that the need for a supply of raw materials adequate for several months in advance calls for a relatively large amount of working capital. "Records show," the advertisement concludes, "that for the period from 1920 through the first nine months of 1930, stocks of rubber companies totalling over $260,000,000 were publicly offered, in addition to stocks distributed through rights and otherwise. During the same period, long and short term bonds were offered to the extent of more than $390,000,000."

N. J. Zinc Nets $4,140,036

The New Jersey Zinc Company reports for the nine months ended September 30, 1930, net profit of $4,140,036 after taxes, depreciation, depletion, etc., equal to $2.11 a share on 1,963,264 shares of stock, and comparing with $6,945,625, or $3.53 a share, in the first nine months of 1929. Net profit for the quarter ended September 30 was $1,050,880, as compared to $1,417,288 in the previous quarter and $2,470,884 in the third quarter of 1929.

Goodyear Flying Squadron Leaves for Argentine

THIRTY young men, known as the Flying Squadron, composed mostly of college graduates who have been trained in American manufacturing methods at the Akron plant of the Goodyear Tire & Rubber Company, about to sail for South America on the *American Legion* on November 28. These men will proceed to Buenos Aires to start the operation of the new Goodyear tire factory on January 1 and to train native workmen there.

Rubber Stocks Decline

Stocks of leading rubber manufacturing companies weakened somewhat during the past fortnight and closed on the various exchanges on December 4 as follows:

	Last Price Dec. 4	Nov. 18	—1930— High	Low
Aetna	—	—	8½	3½
Ajax	½	—	2½	½
Dayton "A"	—	—	81	50
Amer. Hard Rubber	—	—	3⅞	3⅜
Falls	—	—	4¾	1
Faultless	—	—	37	32½
Firestone	18⅜	20⅜	33⅛	15⅝
do. 6% pfd.	67	68½	87⅞	53⅝
Fisk	1	1⅜	5½	1
do. 1st pfd.	2⅝	4⅜	21	2¼
General	—	—	163	100
do. pfd.	—	—	91	83½
Goodrich	19⅜	22	58½	15¼
do. pfd.	—	—	104½	67⅜
Goodyear	48¾	50⅞	96⅞	35⅛
do. 1st pfd.	87½	82	102	78¼
India	—	—	25½	8½
Intercontinental	1½	4	7⅛	1½
Kelly-Springfield	2	2⅞	6⅛	1½
do. 6% pfd.	—	30	39	29
Lee	3¾	4⅛	11	3⅛
Mohawk	—	—	16⅝	5½
do. pfd.	—	—	55	15
Norwalk	¾	¾	4	⅝
Pirelli	38	39¼	50⅞	37½
Raybestos-Manhattan	22	24	58⅞	17¾
Seiberling	5½	6½	18½	4
do. pfd.	—	35	78	30
U. S. Rubber	14¼	15⅞	34	11
do. pfd.	26	28¾	63⅞	21

Names in the News

V. A. COSLER, technical superintendent of the mechanical division of the B. F. Goodrich Company, has resigned that position to become associated with the Hewitt Gutta Percha Rubber Company, Buffalo, N. Y. Nearly 200 Goodrich mechanical division employes attended a dinner in his honor on November 18. He had been with the Goodrich organization 14 years.

SAMUEL BROERS, vice-president and general manager of the Firestone Tire & Rubber Export Company, spoke before members of the Akron Export Club on November 26 and exhibited a number of films which were taken by him on his recent trip around the world.

C. D. GARRETSON, president of the Electric Hose & Rubber Company, Wilmington, Del., has been spending the past few weeks in England and will sail for home at the end of this month.

JOHN F. QUEENY, chairman of the board of the Monsanto Chemical Works, St. Louis, Mo., was re-elected a director of the Mississippi Valley Association at the close of its annual meeting held in St. Louis on November 25. The association has for its aim the advancement of water transportation and has asked for financing to complete the waterways system in five years and to provide a standardized channel of nine feet.

R. E. JEFFERS, merchandising manager of the Pacific Goodrich Rubber Company, has just been placed in charge of advertising and sales promotion activities of that organization. He has been connected with Pacific Goodrich for two years.

LOUIS JOHN DE HOLCZER has joined the technical division of the United States Rubber Company at Passaic, N. J. Mr. De Holczer was for a period of five years in charge of braided and wrapped hose development for the Gates Rubber Company, Denver, Col.

H. K. DEXTER has been appointed credit manager of the Dayton Rubber Manufacturing Company. He was formerly credit manager and assistant treasurer in charge of credits and collections for the Firestone Tire & Rubber Company.

T. A. MCGUIRE spoke before the members of the Illinois-Iowa Section of the American Chemical Society at the Fort Armstrong Hotel, Rock Island, Ill., on November 26 on the subject of "Rubber."

H. SEYMOUR COLTON has been transferred from the Krebs Pigment & Chemical Company, where he was assistant technical director, to the Grasselli Chemical Company, Cleveland, O., where he is now assistant director of the new products department.

GOODYEAR NAMES WININGS TO HEAD MECHANICALS

Important changes in the executive line-up of the mechanical goods department of the Goodyear Tire & Rubber Company, Akron, O., have just been announced. W. C. Winings, assistant manager of the department, has been appointed manager, succeeding D. R. Burr, who becomes consulting manager on mechanical goods sales. G. A. Grauer continues as assistant manager of the department, working closely with Mr. Winings in handling the executive duties and operating functions of the department.

Mr. Winings joined the Goodyear organi-

W. C. WININGS

zation 14 years ago as a general line salesman at Indianapolis. He was later transferred to Chicago as mechanical goods salesman. Still later he was promoted to the managership of the Indianapolis branch, which position he held about two years, when he was given the post of assistant manager of the mechanical goods department.

A. R. DETWEILER has been appointed by the Cooper Corporation as special factory representative for eastern Pennsylvania, Delaware, Maryland and southern New Jersey. He will have headquarters at Reading, Pa.

HARRY BLYTHE, assistant to the president of the Goodyear Tire & Rubber Company, addressed a luncheon meeting of the Canton Exchange Club at the Courtland Hotel in that city on November 14. He discussed the future commercial value of aviation.

HARRY MOORADIAN, factory superintendent of the Dayton Rubber Manufacturing Company, and LYNN HARVEY, tire sales manager, attended the National Petroleum Association convention at Tulsa, Okla., last month.

JAMES C. LAWRENCE, formerly assistant treasurer of the B. F. Goodrich Company, and former president of the Faultless Rubber Company, is studying national economic conditions as a member of President Hoover's unemployment commission. He is now assistant president of the University of Minnesota, but was granted a two-month leave of absence to serve on the commission.

G. H. CALLEN has been appointed to the position of export manager by the India Tire & Rubber Company. Mr. Callen has been associated with India as assistant export manager for the past four years and previously held similar positions with other Akron companies.

DR. P. S. LANDES, missionary in Brazil, gave an extended talk on the Ford Motor Company rubber growing concession on the Amazon at the Faith Mission, Wellsville, O., on November 17.

E. J. THOMAS, assistant to the factory manager of the Goodyear Tire & Rubber Company, spoke before a meeting of Goodyear employes on November 22.

CHARLES M. O'HEARN, eastern sales manager of the Firestone Tire & Rubber Company for several years, has become associated with the firm of Young & Ottley, investment bankers.

BRYANT J. BROOKS is now handling market analysis work in connection with mechanical goods sales for the B. F. Goodrich Company. Mr. Brooks, a University of Rochester graduate, was formerly credit manager and accessory sales manager for the Mohawk Rubber Company.

COLONEL C. M. PIPER, who resigned in September as general sales manager of the Fisk Rubber Company, has been appointed sales manager of the Johnson Motor Company, Waukegan, Ill. He had served with the Fisk organization for two years, prior to which he was associated with the Goodyear Tire & Rubber Company.

J. P. RIPLEY, who was for 24 years a representative of the Fisk Rubber Company, is now eastern division manager of the Kelly-Springfield Tire Company.

CATALPO
for
Treads

· Rubber News Around the World ·

AUSTRALIAN RAPSON TYRE PLACED IN LIQUIDATION

Melbourne preference stockholders have recommended that the Rapson Tyre & Rubber Company of Australia, Ltd., be placed in liquidation, following a report by a special committee which investigated the position of the company. The committee, in urging the liquidation, suggested that an offer by James Henty & Company, the largest creditor, to make up the present stocks into tires be accepted. It has also been arranged for a representative of the preference shareholders to act with the creditors in liquidation.

C. H. Nelson, chairman of the recent stockholders' meeting, said that prospects of raising £150,000 of capital necessary to carry on the business were very remote. The company, since its formation in 1926, had showed no profit, and now owes £140,000 to creditors. It was brought out at the meeting that Rapson tires of the English model had never been produced, though £60,000 had been paid for the manufacturers' rights.

Mr. Nelson also stated that the circumstances of the flotation of the firm would be investigated and legal opinion would be obtained on the negotiations conducted with the Dunlop-Perdriau Rubber Company for the sale of the Rapson business.

Noiseless Trolleys in London

Trackless trolleys of the type used in some parts of the United States are now being built for use on the streets of London. They will be equipped with pneumatic-tired wheels and, in addition to being comparatively silent, are expected to be faster than those which run on rails.

Memorial Tablet to Dunlop

The Dunlop Rubber Company, Ltd., is planning to set up a memorial tablet to the late John Boyd Dunlop at the premises in Belfast where he invented and manufactured the first pneumatic tire. The tablet has already been completed and will be unveiled in the near future by Sir William Coates, Lord Mayor of Belfast.

CATALPO
for
Frictions

Canadian Goodrich Wages Firm

E. S. Sargeant, vice-president and general manager of the Canadian Goodrich Company, Kitchener, Ont., has announced that the company will not effect any general reduction in salaries or wages.

I. R. I. Discussion of Latex

Members of the Manchester Section of the Institution of the Rubber Industry will meet on December 18 at the Manchester, Ltd., in that city. J. H. Carrington will read a paper on "The Use of Concentrated Latex in the Rubber Industry."

Australian Goodyear Expands

The Goodyear Tyre & Rubber Company (Australia), Ltd., is now manufacturing several types of mechanical goods at its factory at Granville, New South Wales. Belting of all kinds is being made, as well as mechanical hose and garden hose.

NEW CABLE COMPANY IS PLANNED FOR AUSTRALIA

As a result of negotiations recently conducted between the Dunlop-Perdriau Rubber Company of Australia, the Cable Makers' Association, which embraces the principal cable manufacturers of Britain, and Metal Manufacturers, Ltd., a new cable manufacturing company is to be floated in Australia. The new company will be known as C. M. A., Ltd., the letters signifying Cable Makers of Australia, Ltd.

At present the fate of the new company is in the balance, its establishment depending entirely on tariff assistance. The matter is now before the Commonwealth Tariff Board and it is confidently anticipated that the board will take a sympathetic view of the undertaking.

Italian Rubber Goods Trade Continues Steady Expansion

THAT the rubber manufacturing industry in Italy is continuing to expand is pointed out by Raffaele Sansone of Genoa in a recent news letter to *Industrial and Engineering Chemistry*. His comments on the Italian rubber goods trade follow:

The rubber industry sprang up in Italy about the same time as in the other countries—slightly more than fifty years ago—i.e., in 1872, the first rubber factory was opened in Milan. For more than twenty years this remained the only representative of this industry. In addition to the articles usually manufactured, the production of insulated conductors was soon undertaken, and later, cable for submarine telephone and telegraph was made. Subsequently a large number of new factories was built, so that at present there are 54 plants, of which 20 are near Milan, and 12 at Turin. Of these, 18 are equipped only for the production of insulated wire.

Capital and Labor Increased

The employees increased from 5300 in 1912 to about 17,000 in 1928, of whom 15,000 were laborers and 2000 were clerks. The invested capital increased from 27,500,000 lire in 1912, to 260,000,000 in 1928.

The importation of crude rubber necessary for the rubber industry has increased, in proportion to industrial development, from an average of 3000 tons before the war, to approximately 17,000 tons in 1929. The value of the products is 600,000,000 lire for rubber articles, and 300,000,000 for conductors. All varieties of rubber articles are produced.

On account of the restricted internal market, Italian industry has had to look to foreign outlets for its expanding production. It imported manufactured goods worth 93,252,000 lire in 1927, whereas exports amounted to 280,964,000 lire; in 1928 imports were valued at 102,918,000, and exports at 257,685,000 lire; in 1929, 104,608,000, and 254,523,000 lire, respectively.

The decrease in the last two years is not a decrease in exports, but indicates a reduction in values owing to the reduced cost of the raw materials, the volume of exports having increased. Four-fifths of the exports consist of pneumatic casings for automobiles (before the war they formed the entire exports) which in 1928 were sold for over 200,000,000 lire.

Tire Sales Reveal Gains

Sales in tires are increasing, i.e., by 9 per cent in 1929 over 1928, and more than 25 per cent over 1913. The principal markets, in the order of their importance before the war were Belgium, Switzerland, England, Germany, Austria, Argentina, etc.

Within the past few days the Société Générale des Etablissements Bergougnan di Clermont-Ferrant has given up its share in the Società Anonima Bergougnan Italiana at Turin to a group representing the principal exponents of the industry in Turin, and headed by the Banca Commerciale Italiana of Milan.

A certain amount of participation by the Società Italiana Pirelli of Milan is permissible, in consideration of the project for merging a number of rubber industries for the development of a production program of rationalization.

Rubber Goods and Specialties

Noshoc Recoil Pad

The Seamless Rubber Company, New Haven, Conn., is offering the Noshoc recoil pad for shotgun and rifles. Finished in walnut color to match the wood of the stock, it presents an attractive appearance when attached to any gun. The diagram shows the interior construction of three cushion

wells, each containing a full capacity vitalized chemical jell which pounding can never deaden. The outer shell is of live, elastic, springy cushion rubber which will remain soft and resilient for years under all climatic conditions. Trapped in the outer shell by a molding process, the interior shock-absorbing jell cells absorb all jar without disturbance. The base plate is semi-rigid hard rubber conforming to the exact curve of the butt. There are no slots, holes or openings to let the kick-thrust run wild, and the shoulder surface is of non-skid type.

Cheyenne Sport Shoe

Under the name of the Cheyenne sport shoe, the B. F. Goodrich Footwear Corporation, Watertown, Mass., has introduced a new model which is built along the lines of

the company's Long Lance shoe, except that it has a rolled sole instead of a molded sole. It has the flexible shank—the "barefoot" construction—of the Long Lance shoe and also has the sturdy construction of tread, tough rubber stock and high grade uppers of company's Pontiac shoe, a best seller for three years. It comes in the one color combination of sun tan and mahogany brown.

Windshield Wiper Tubing

The Gates Rubber Company, Denver, Col., has introduced a new product in its Vulco rubber windshield wiper tubing, which is said to be made of pure rubber, treated to make a good aging stock. Although primarily designed for windshield wiper tubing, it is adapted to a variety of uses, which include conducting air, gases, liquids and acting as an insulator for wires carrying electric current. It is red in color and has an inside diameter of one-eighth of an inch and a thickness of wall of 3/32 of an inch. It is furnished in 25-foot lengths and the one size fits all cars.

Latex Bonded Brake Lining

The Multibestos Company, Walpole, Mass., has introduced the Multibestos LX in answer to the enlarged demand for flexible and rigid molded brake linings and clutch facings. This new latex-bonded lining is ground on all surfaces to precise measurements, which assures 100 per cent surface contact, uniform friction and also eliminates readjustments due to high spots. It will not swell under any driving conditions and it has unusually even coefficient of friction throughout its life.

Electric Hot Water Bottle

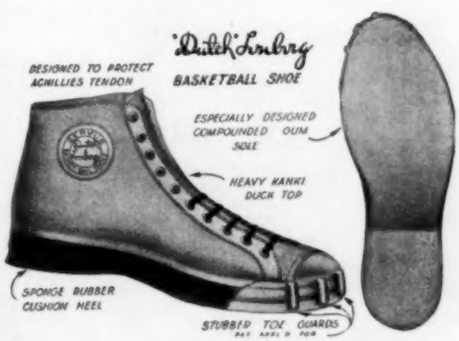
The Davol electric hot water bottle has been introduced by the Davol Rubber Company, Providence, R. I., to meet the demand for a bottle that will not cool off. It is a seamless, molded bottle made in two-quart size from heavyweight stock, bright red in color, and with heavy edges to insure long

service. The heating unit is adapted to 110 volt alternating current and is said to be the only appliance of its kind approved by the Underwriters' Laboratory of the National Board of Underwriters and by the Hydro Commission of Canada. According to the manufacturer, it is convenient, safe and economical to use, doing away with dangerous wire mesh. It will not overheat and consumes current to the extent of only one-sixth to one-fifth of a cent an hour.

The Faultless Manufacturing Company, Baltimore, Md., is now introducing the Nobelt waistband, a rubber elastic band to replace pajama draw strings.

Servus "Dutch" Lonborg Basketball Shoe

In the "Dutch" Lonborg model, the Servus Rubber Company, Rock Island, Ill., is offering a basketball shoe that is claimed to eliminate clumsiness, minimize the menace of slipping and prevent bruised heels and foot burn. Designed by A. C. Lonborg, Northwestern University basketball coach, it fits the contour of the foot and ankle, clings to the floor, has strong, rugged construction and embodies a buoyancy that is said to give players confidence. Heavy, flexible, khaki army duck with one-piece wrinkle proof lining gives extra wear and eliminates friction, while the heavy duty non-skid sole of gray compounded rubber will not burn, scuff or slip on playing surface. A heavy brown rubber stubber toeguard saves wear and tear from toe dragging, and a special bat-wing scuffer toe cap



of brown rubber protects the toe of the shoe. The brown outside foxing and gray inside foxing are vulcanized to upper fabric so that they are inseparable. A sponge rubber cushion heel absorbs shocks and relieves strain.

Current Crude Rubber Items

DUTCH RUBBER COMMITTEE TO CONTINUE ITS WORK

All of the directors of the Dutch division of the Anglo-Dutch Rubber Growers Committee were renominated last month and with the exception of one member, who desired time to consider, all have accepted their renominations. At the meeting of the Dutch producers on November 17, a large majority voted for adhesion to the negotiations of the committee and with only two dissentient votes the group decided to maintain the committee.

J. N. Burger, a member of the committee, denied a report that the Dutch industry was proposing a 25 per cent restriction of the total rubber crop, with the control of all native output and an export tax, beginning with the new year. He said such a plan was drafted some time ago, but subsequent events rendered its realization out of the question.

INDIAN ESTATE WORKERS DEPARTING FROM MALAYA

It is reported that nearly every estate in Malaya is reducing its labor force as a result of increased tasks given to individual tappers, and between 15 per cent and 20 per cent of the usual labor force is being discharged on most estates. The total Indian labor population in Malaya on June 30 was about 318,000. The number of Indian laborers repatriated between January and August was 5,107, in August the number sent back to India was 5,865, and between September 1 and 24 the total was 16,202.

The August and September emigrations alone represent a figure which is roughly 12 per cent of the number of Indian laborers employed on estates on June 30, that is 263,704.

Rubber Exchange to Consider New Ten Ton Unit of Trading

DRASTIC revisions in the present form of crude rubber contract as dealt in on the rubber exchange will come up for discussion by the membership on December 11. A special meeting has been called for 3:30 p. m. on that day by the board of governors for such discussion.

Two contracts are now transacted in rubber, the "A" and the "No. 1 Standard." The latter will be left unaltered for the present, but the board has recommended certain amendments to the "A" terms, of which the following are notable:

1. Delivery to involve ten tons on each contract instead of 2½ tons, as now provided.

2. Prices to be in multiples of one and one-hundredth of 1c a pound instead of one-tenth of 1c.

3. Grades deliverable to specify any one of nine various grades of Plantation Hevea rubber, exchange type, instead of the present indefinite five grades.

4. Reductions in the scale of commission rates for both members and non-members.

Seek Uniformity in Contracts

The first two amendments propose to bring the terms of the old contract to a uniform basis with the newer No. 1 Standard form as regards tonnage and price fluctuation. Rubber quotations will thus be more easily adjusted in the two contracts in relation to one another. At present the old contract is quoted in "tens," or at 9.10c, 9.20c and 9.30c, where the newer terms fluctuate in one one-hundredths, or 9.18c, 9.19c, and 9.20c per pound, or the same as cotton and other commodities.

It is also proposed to clarify the by-laws of the exchange as regards interest requirements, and also the causes for suspension and expulsion. The following paragraphs have been added to the section of the by-laws covering the latter:

"For becoming insolvent as the term is defined in the by-laws.

"For suspension or expulsion from membership in any other security or commodity exchange."

It is planned to delete the provision on interest requirements stating that a member must obtain an amount equal to the original margin requirements of the Clearing House, or charge customary interest at the rate of 6 per cent.

Nine Grades Are Deliverable

Under the new A contract, delivery of 22,400 pounds is to be made up of one of the following grades:

No. 1 ribbed smoked sheets.
No. 1 thin crepe.
No. 1 thick crepe.
No. 2 thin crepe.
No. 2 thick crepe.
No. 2 ribbed smoked sheets.
No. 3 ribbed smoked sheets.
No. 4 ribbed smoked sheets.
No. 5 ribbed smoked sheets.

Commissions are to be $7.50 per contract to members in the United States and Canada instead of $10, and to non-members, $20 instead of $15. Outside of these two countries the rates are $1.25 higher. Floor brokerage is set at $2.50 per contract instead of $1.50. Complete straddle, $25 for members and $45 for non-members.

French Aid for Planters

Rubber planters in Indo-China have been granted temporary government assistance in the form of monetary advances on rubber exports until the duty on rubber imported into France from other French sources has been increased.

Closing Prices on Rubber Exchange of New York, Inc.

FROM NOVEMBER 19 TO DECEMBER 3, 1930

		Spot	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Sales
No. 1 Standard Contract of 10 Tons															
Nov.	19	9.50	9.40	9.54	9.67	9.80	9.89	9.97	10.09	10.20	10.30	10.40	10.50	——	47
	20	9.50	9.40	9.53	9.65	9.78	9.87	9.95	10.05	10.15	10.25	10.35	10.45	——	51
	21	9.25	9.20	9.34	9.48	9.62	9.71	9.80	9.90	10.00	10.10	10.20	10.30	——	40
	22	9.20	9.20	9.32	9.41	9.55	9.65	9.75	9.85	9.95	10.05	10.15	10.30	——	15
	24	9.25	9.20	9.35	9.45	9.58	9.69	9.80	9.88	9.95	10.08	10.20	10.37	——	45
	25	9.12	9.05	9.18	9.30	9.42	9.51	9.60	9.70	9.80	9.90	10.00	10.20	——	53
	26	9.06	9.06	9.18	9.29	9.40	9.53	9.66	9.76	9.82	9.96	10.06	10.26	——	35
	28	9.06	9.00	9.12	9.23	9.35	9.45	9.55	9.65	9.75	9.90	10.00	10.20	——	39
	29	9.16	9.10	9.22	9.33	9.45	9.55	9.65	9.75	9.85	9.98	10.10	10.30	——	10
Dec.	1	9.43	9.45	9.56	9.67	9.78	9.88	9.98	10.09	10.20	10.32	10.43	10.65	10.80	69
	2	9.43	9.50	9.63	9.75	9.87	9.97	10.07	10.16	10.25	10.34	10.43	10.66	10.76	112
	3	9.43	9.43	9.53	9.67	9.82	9.93	10.02	10.11	10.18	10.29	10.40	10.56	10.72	41
"A" Contract of 2½ Tons															
Nov.	19	——	9.30	9.50	9.60	9.70	9.80	9.90	10.00	10.10	10.20	10.30	10.40	——	223
	20	——	9.30	9.40	9.50	9.60	9.70	9.80	9.80	10.00	10.10	10.20	10.30	——	178
	21	——	9.10	9.30	9.40	9.50	9.60	9.70	9.70	9.90	10.00	10.10	10.20	——	198
	22	——	9.10	9.30	9.40	9.50	9.60	9.70	9.70	9.80	9.90	10.00	10.20	——	53
	24	——	9.10	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00	10.10	10.30	——	168
	25	——	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.80	9.80	9.90	10.00	——	138
	26	——	9.00	9.10	9.20	9.30	9.40	9.60	9.70	9.80	9.90	10.00	10.20	——	68
	28	——	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.80	9.90	10.00	10.20	——	59
	29	——	9.00	9.10	9.20	9.30	9.50	9.60	9.70	9.80	9.90	10.00	10.20	——	55
Dec.	1	——	9.40	9.50	9.60	9.70	9.80	9.90	10.00	10.20	10.30	10.40	10.60	10.70	101
	2	——	9.30	9.50	9.60	9.70	9.80	10.00	10.10	10.20	10.30	10.40	10.60	10.70	222
	3	——	9.30	9.40	9.50	9.70	9.80	9.90	10.00	10.10	10.20	10.30	10.40	10.60	57

CATALPO
for
Mechanicals

H. S. FIRESTONE, JR., TALKS ON RUBBER IN ECONOMICS

Speaking before 1,200 members and guests of the Economic Club of New York on November 24, Harvey S. Firestone, Jr., vice-president of the Firestone Tire & Rubber Company, discussed the important part that rubber plays in the economic life of Europe. The meeting was devoted to a consideration of the economic recovery of Europe and its relation to the United States, and the main speaker was Dr. Hjalmar Schacht, former president of the Reichsbank.

Mr. Firestone declared that a further aggressive motor road building program on the part of European countries should help to break down the barriers of different languages, bridge the gulf of distrust and suspicion between communities and countries, and drive away the misunderstandings and prejudices bred of ignorance and isolation.

"The relation of the American rubber industry to such a program would be an important one," he asserted. "In 1929, $39,000,000 in value of tires, or approximately 12% of tires consumed in Europe, were supplied through export from the United States. This has been a diminishing percentage due to the fact of high tariff walls which numerous European countries have built around themselves. The natural and necessary result of this situation has been the establishment of European plants by American tire manufacturers. In 1929, approximately 25% of the European tire requirements were furnished by such plants, so that the tires of American companies, manufactured either here or abroad, took care of nearly 40% of the requirements of the European car owner. Consequently, if we agree with Calvin Coolidge, as I do, that the establishment of foreign branches by our industries is beneficial both to the countries in which they are located and to our country as well, our rubber industry is, in still another way, an aid in the economic recovery of Europe."

Goodrich Radio Programs

An interesting story of the B. F. Goodrich Company or its products is told each Wednesday, Thursday, Friday and Saturday night following the radio program of Uncle Abe and David at 6:45, Eastern Standard Time. The program is broadcast over the Red Network of the National Broadcasting Company from WEAF, New York.

Henry B. Sprague

Henry B. Sprague, a director of the Boston Woven Hose & Rubber Company, Cambridge, Mass., died at Boston on November 30 in his 75th year. Mr. Sprague was a prominent banker of Lynn and Boston and was president of Sprague, Breed, Stephens & Newhall, coal dealers. He was also a director of the National Shawmut Bank of Boston and the Thomson Electric Welding Company of Lynn, a trustee of the Lynn Institution for Savings and the Lynn Morris Plan Bank, and a former president of the Central National Bank of Lynn.

George Schlosser

George Schlosser, who retired two years ago from active service as general factory manager of the footwear factories of the United States Rubber Company, died at Woonsocket, R. I., on November 8. He was 65 years old and had served with the company 45 years when he retired in 1928.

Mr. Schlosser began work with what is

now the United States Rubber Company in 1882 when he became an office boy for the New Jersey Rubber Company, New Brunswick, N. J. The first important step in his advancement was his promotion to be assistant superintendent at New Brunswick. Then he was transferred to the National India Rubber Company at Bristol, R. I., as superintendent.

In 1901 supervision of the Woonsocket factories was added to his jurisdiction, and later the Lawrence Felt Company's plant and the L. Candee & Company factory were placed under his general direction. After 40 years of climbing, Mr. Schlosser was on November 1, 1922, appointed general manager of manufacturing in footwear and miscellaneous factories of the United States Rubber Company. He retired on November 1, 1928.

NO TRACE IS FOUND OF MITCHELL B. KAUFMAN

Despite extraordinary effort and the use of hundreds of guides and four airplanes, no definite trace has yet been found of Mitchell B. Kaufman, president of the Converse Rubber Company, Malden, Mass., and the Hodgman Rubber Company, Framingham, Mass., who disappeared more than a month ago while on a hunting trip in the Maine woods. Mr. Kaufman was lost on November 5 while hunting with other Converse Rubber executives in the woods near Jackman, Me.

The following statement was recently given out by Albert H. Wechsler, assistant to Mr. Kaufman: "Not unnaturally, the disappearance in the Maine woods of our president, Mitchell B. Kaufman, has resulted in many rumors, some of them calculated to reflect upon the financial condition of the Converse Rubber Company.

"It is our duty to our stockholders and loyal customers in every part of the world to put at rest any suspicion that there is even the most remote connection between our president's disappearance and the financial status of our company. It is authoritatively stated that the Converse Rubber Company has never been in better condition, financially or otherwise. Our certified public accountant's statement is ample proof of this declaration."

Two years ago, M. B. Kaufman organized a syndicate to rehabilitate the finances of the Converse Rubber Company, a business with a twenty-year background. Mr. Kaufman became the new company's first president, retaining the old company's personnel, bringing to their long experience new ideas and associations. The business expanded rapidly.

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, DECEMBER 4, 1930

RUBBER

Crude

DURING the month of November, the average of the daily closing prices for spot ribbed smoked sheets at New York was 9.01 cents a pound as compared with 8.20 cents in October and with 16.62 cents in November, 1929. The commodity opened the month at 8¼ cents, dropped to 8⅛ cents and rose to 9⅝ cents, closing on November 29 at 9⅛ cents a pound.

The sharp advance in price during the month was due in part to the belief that a definite restriction plan might be worked by Dutch and British producers and also to the recent fall in English warehouse stocks. Later news showed that the Dutch have failed to agree on any definite restriction proposal, and the drop in London and Liverpool stocks has been taken to indicate shipments to France rather than any increase in local consumption. Actual shortages of some sizes of tires have been reported, and most Akron factories are now increasing their production schedules after a brief let-down due to the Thanksgiving holiday.

Prices quoted on the New York outside market at the close on December 4 were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-Dec.	.09⅛	@	.09⅝
Jan.-Mar.	.09⅝	@	.09⅝
Apr.-June	.09⅝	@	.09⅞
First Latex, crepe spot	.09⅝	@	.09½
Amber Crepe, No. 2	.08¾	@	.09
Amber Crepe, No. 3	.08⅝	@	.08¾
Amber Crepe, No. 4	.08¼	@	.08½
Brown Crepe, Clean thin	.08½	@	.08⅝
Brown Crepe, specky	.08¼	@	.08½
Liquid Latex, per gal.	.75	@	.85

Paras—

Up-river Fine	.12	@	.12¼
Up-river Medium	Nominal		
Up-river Coarse	.07	@	.07½
Acre Bolivian, fine	.12	@	.12½
Caucho Ball, Upper	.07	@	.07½
Islands, fine	Nominal		

Centrals—

Central, scrap	—	@	.07
Esmeraldas	—	@	.07

Balata—

Block, Colombia	Nominal		
Block, Ciudad	.34	@	.35

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers

Spot-Dec.		@	4⅝d
Jan.-Mar.		@	4¾d
Apr.-June		@	4⅞d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers

Spot		@	4¼d

Scrap

That the turn of the year will bring the long awaited increase in business is now the opinion of the scrap rubber trade. While conditions are still far from normal, the position of the market is improved since the recent two-cent advance in the price of the crude commodity. Late prices are as follows:

(Prices to Consumer)

Auto tire peelings	ton	23.50	@	25.00
Mixed auto	ton	12.00	@	12.50
Bicycle tires	ton	9.00	@	10.00
Clean solid truck tires	ton	24.50	@	26.00
Boots and shoes	cwt.	1.10	@	1.25
Arctics, untrimmed	cwt.	.90	@	1.00
Inner tubes, No. 1	lb.	.05¼	@	.05½
Inner tubes, No. 2, compounded	lb.	.02⅛	@	.02¼
Inner Tubes, Red	lb.	.02⅛	@	.02⅜
Air Brake Hose	ton	10.00	@	12.00
Rubber Hose	ton	9.00	@	10.00

Reclaimed

The reclaimed rubber industry is now in a better inventory position than it has been for a long time. With the expected increase in tire output early next year, the market for reclaim should improve sharply. Latest prices quoted for the various grades of reclaimed rubber are as follows:

High Tensile

Super-Reclaim Black	lb.	.08½	@	.08¾
High Tensile Red	lb.	.08¼	@	.08½

Shoe

Unwashed	lb.	.06	@	.60¼
Washed	lb.	.08	@	.08¼

Tube

No. 1 (Floating)	lb.	.08¼	@	.08⅝
No. 2 (Compounded)	lb.	.07½	@	.07⅝

Tires

Black	lb.	.05¾	@	.06
Black, selected tires	lb.	.06	@	.06½
Dark Gray	lb.	.07	@	.07½
Light Gray	lb.	.07¾	@	.08
White	lb.	.08¾	@	.09
Truck, Heavy Gravity	lb.	.06	@	.06¼
Truck, Light Gravity	lb.	.06¼	@	.06⅓

Miscellaneous

Mechanical blends	lb.	.95	@	.05⅓

COTTON and FABRICS

Cotton

THE average of the daily spot closing prices for middling upland cotton during the month of November was 10.96 cents a pound. This compares with the October average of 10.63 cents and the September average of 10.85 cents. While higher than the last two months, this figure is still far below the November, 1929, average price of 17.53 cents a pound.

At the end of the period, however, the market was slightly lower. The closing quotation on December 4 was 10.45 cents as against 11 cents a fortnight ago. The depression in the market is still due to the heavy carryover expected and to the lack of faith in prospects for a reduction of acreage next year.

The high, low and closing prices on the New York Cotton Exchange on December 4 were as follows:

	High	Low	Close	Close
		Dec. 4		Nov. 18
Dec.	10.44	10.33	10.37	10.84
Jan.	10.53	10.43	10.47	11.00
Mar.	10.79	10.68	10.72	11.30

Tire Fabrics

Revised figures, based on the recent census of manufactures, show that the tire industry in the first nine months of 1930 consumed 162,820,251 pounds of cotton fabric in the manufacture of all types of casings, inner tubes and solid and cushion tires. Late prices for the various grades of tire fabrics are as follows:

CORD

Peeler, carded, 23/4/3	lb.	.33	@	.33¼
Peeler, carded, 23/5/3	lb.	.36	@	.36¼
Peeler, carded, 13/3/3	lb.	.33½	@	.33¾
Peeler, carded, 15/3/3	lb.	.34	@	.34¼
Egyptian, carded, 23/5/3	lb.	.45	@	.45½
Egyptian, combed, 23/5/3	lb.	.51	@	.51½

CHAFERS

Carded, American, 8 oz.	lb.	.29	@	.29½
Carded, American, 10 oz.	lb.	.28½	@	.29
Carded, American, 12 oz.	lb.	.27½	@	.28½
Carded, American, 14 oz.	lb.	.26	@	.27

LENO BREAKER

Carded, American, 8¼ oz.	lb.	.28	@	.33
Carded, American, 10¼ oz.	lb.	.28	@	.33

SQUARE WOVEN

Carded, American, 17¼ oz. 23-11 ply	lb.	.36	@	.36½
Carded, American, 17¼ oz. 10-ply	lb.	.26	@	.26⅓

Sheetings

Reductions from one-eighth to one-quarter of a cent a yard in the price of sheetings were made during the fortnight. The market has been only fairly active. The latest quotations, as reported by the Textile Brokers Association, follow:

40-inch, 2.50-yard	yd.	—	@	.08½
40-inch, 2.85-yard	yd.	.07⅝	@	.07½
40-inch, 3.15-yard	yd.	—	@	.08⅓
40-inch, 3.60-yard	yd.	—	@	.07
40-inch, 3.75-yard	yd.	—	@	.06¼
40-inch, 4.25-yard	yd.	—	@	.05½

Ducks

Price quotations for cotton ducks still remain at their lowest levels for the year, and the market has not shown any appreciable increase in activity. The price quotations are as follows:

Belting and Hose	lb.	.25	@	.26
Enameling	lb.	.28	@	.31
Single filling	lb.	.11⅓	@	.12½
Double filling	lb.	.13	@	.14

CHEMICALS

TAKING advantage of the present low prices for carbon black and some of the other compounding materials and chemicals used in the rubber industry, factories have been placing contracts for at least part of next year's supplies. Stocks of these supplies at rubber centres are not believed to be very high at the present time, and there is plenty of room for adding to such inventories. Leading rubber chemical suppliers are, therefore, intensifying their sales efforts at the present time to get their share of this business. The price structure in the rubber chemicals market has remained stable, with the exception of slight declines in the case of some whites.

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16
Captax	lb		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	--
Oxynone	lb.	.68 @	.80
Phenex	lb.	.75 @	—
Pipsol	lb.	4.30 @	4.50
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermio F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.25½@	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.07¾@	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.36
Ultramarine	lb.	.06 @	.32
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½
Reds			
Antimony crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden, 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Maroon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Smith's 444 Crimson f.o.b. Springfield	lb.	.08¾@	.10
Rub-Er-Red, f.o.b.Easton	lb.	.08¾@	—
Venetian red	lb.	.08 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.80
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanium oxide	lb.	.21 @	—
Titanox B, f.o.b. St. Louis.	lb.	.06½@	.07
Titanox C, f.o.b. St. Louis,	lb.	.07 @	.07½
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅞@	.06⅞
Horsehead Brand: Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅜@	.10⅞
blue label	lb.	.09⅜@	.09⅞
red label	lb.	.08 @	.08½
Zinc Oxide—French Process			
White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅜@	.10⅞
Red seal	lb.	.09⅝@	.09⅞
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.07½@	.07¾
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blacks			
Arrow "Aerfloted"	lb.	.04½@	.09½
Bone Black	lb.	.06 @	.12½
Carbon, compressed	lb.	.04 @	.08½
Carbon, uncompressed	lb.	.04 @	.08½
Disperso, f.o.b. Louisiana	lb.	.041 @	—
Disperso, f.o.b. Texas	lb.	.04 @	—
Drop Black	lb.	.06 @	.14
Fumonex	lb.	.04 @	.07½
Excello, compressed	lb.	.05 @	.09
Gastex, f.o.b. Texas	lb.	.03½@	.05
Lamp Black	lb.	.10 @	.40
Micronex	lb.	.04½@	.09½
Thermatomic-Thermax	lb.		
Flex	lb.		
P-33	lb.		
United carbon, fob Tex.	lb.	.04½@	.09½
Velvetex carbon	lb.	.03 @	.06
Blanc fixe dry f.o.b. works	ton	75.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, Kaolin, domestic	ton	8.00 @	9.00
Aerfloted, Suprex	ton	8.00 @	20.00
Colloidal	lb.	.05 @	.08
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Mineral Flour, c.l. f.o.b. mine	ton	20.00 @	23.00
Par	ton		
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.62 @	3.92
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	— @	1.00
English cliffstone	cwt.	1.75 @	2.00
Quaker	ton		
Superfine	ton	10.00 @	12.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.23 @	.24½

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Paradura	ton	62.50 @	65.00
Parmr, solid	ton	28.00 @	48.00
Pioneer. MR, solid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	.33½@	.35
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.13 @	.17
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.08 @	.09¾
Cottonseed, crude		.06½@	.07
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c.l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	— @	.07
Niger	lb.	.05¼@	.05¼
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.18 @	.23
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.54 @	.55
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	7.00 @	—
Rosin, grade K, 280 lb.	bbl.	— @	5.65
Pigmentar	gal.	.18 @	.23
Tar Retort, 50 gal.	bbl.	13.50 @	15.00
Solvents			
Acetone, pure	lb.	.11 @	.12
Alcohol, denatured, No. 1 bbls.	gal.	.40 @	.44
Benzol, 90%	gal.	.21 @	.23
Carbon, bisulphide	lb.	.05½@	.06¼
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.35 @	.40
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.41 @	.42
wood	gal.	.38 @	.39
destructively distilled	gal.	.35 @	—
Waxes			
Beeswax, white	lb.	.51 @	.53
Carnauba	lb.	.30 @	.34
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02¼@	—
White crude scale 124/126	lb.	.02½@	—
Refined, 125/127	lb.	.03¼@	—
Refined, 128/130	lb.	.03¾@	—
Refined, 135/137	lb.	.05¼@	—
Refined, 138/140	lb.	.07¼@	—

ANTI-OXIDANTS

Agerite, Resin	lb.		
Powder	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Vandex	lb.		

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

THAT the tire industry was particularly hard hit by the general business depression is evident from the Rubber Manufacturers' Association crude rubber consumption figures, which show the decline more marked in tires and tire sundries than in other lines of rubber products. During the first nine months of 1930, the tire industry absorbed 82.1 per cent of all the crude rubber consumed in this country, whereas in the same period of 1929 it used 85.5 per cent of the entire rubber consumption.

The total figures of the quarterly report show that the third quarter of 1930 was the lowest in rubber consumption since 1924. This has been followed by an October consumption lower than that of any previous October since 1927, and current estimates figure that the fourth quarter will be below any corresponding three-month period since the fourth quarter of 1923.

As mentioned in the last issue of THE RUBBER AGE, the Rubber Manufacturers' Association has concluded on the basis of the recent census of manufactures that its own tire and tube reports for 1929 and 1930 are fully 80 per cent complete, as against 75 per cent of completeness heretofore. These figures for this year and last year have, therefore, been completely revised and are now presented according to the new estimate on Page 270 of this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,836	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,232,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.	38,163	16,192,261	18.94	2,614	1,190,510	20.33	35,549
Nov.	43,507	18,189,305	18.66	2,929	1,300,354	19.82	40,578
Dec.	42,952	17,573,330	18.27	2,745	1,007,279	16.38	40,207
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,653,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,532	14.82	42,735
May	42,692	13,373,232	13.98	3,154	1,085,432	15.37	39,538
June	39,993	12,215,848	13.79	3,125	1,027,136	14.67	36,868
July	35,182	10,553,944	13.39	2,732	736,863	12.04	32,450
Aug.	35,713	9,666,362	12.08	2,194	646,667	13.16	33,519
Sept.	35,380	8,460,812	10.68	1,509	429,789	12.72	33,871
Oct.	46,069	9,893,980	9.59	2,054	348,331	7.57	44,015
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1923	1924	1925	1926	1927	1928	1929	1930
Jan.	30,106	29,058	29,638	32,196	31,518	34,403	43,002	36,669
Feb.	30,149	25,736	29,761	31,136	30,137	33,702	41,594	32,726
Mar.	36,629	28,385	33,498	32,936	36,141	35,688	44,730	35,914
Apr.	29,085	27,129	34,139	32,696	35,871	32,772	47,521	40,207
May	36,155	25,845	35,322	29,364	34,592	37,333	49,233	39,902
June	24,272	22,753	35,822	28,598	33,801	37,676	45,227	34,463
July	17,685	23,396	36,053	27,577	29,219	37,407	41,526	29,245
Aug.	20,359	28,982	35,909	34,533	33,460	42,927	38,274	30,575
Sept.	17,594	31,497	31,691	32,904	27,214	39,882	34,707	25,288
Oct.	21,321	31,520	29,047	29,836	26,790	40,857	34,800	27,271
Nov.	20,437	27,289	28,853	28,080	26,792	37,461	27,659	
Dec.	31,902	27,199	28,748	26,293	25,492	31,232	23,531	
Totals	305,694	328,769	388,481	366,149	371,027	441,340	469,804	

Figures on Quarterly Basis

Quarter	1923	1924	1925	1926	1927	1928	1929	1930
Jan./Mar.	96,776	87,609	95,263	94,301	99,216	103,558	128,565	101,619
Apr./June	89,493	75,674	104,099	87,109	103,242	108,500	139,292	112,092
July/Sept.	55,621	83,813	99,493	93,793	89,210	117,573	113,746	85,261
Oct./Dec.	63,617	92,656	85,789	83,212	80,860	117,597	84,872	
Totals	305,507	339,752	384,644	358,415	372,528	442,227	466,475	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1929	1930	MONTHS	1929	1930
January	22,602,000	25,731,000	July	36,860,000	38,256,000
February	22,776,000	26,509,000	August	37,759,000	37,433,000
March	28,495,000	31,029,000	September	34,193,000	37,823,000
April	32,019,000	34,549,000	October	32,816,000	33,328,000
May	34,117,000	36,497,000	November	31,502,000	
June	33,163,000	35,902,000	December	26,550,000	

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave
1928																																
July	—	18⅝	18⅝	18¾	19	19	19	—	19¾	19½	19½	19⅝	19½	19½	—	19½	19⅝	19⅝	19⅝	19¾	19⅝	—	19¾	19½	19¾	19¾	19¾	19¾	—	19¾	19¾	19¾
August	19¼	19½	19¾	19¾	—	19¾	19⅞	20	—	19⅞	19⅞	19⅞	—	19⅝	19⅝	19⅝	19⅝	19½	19¾	19¾	19¾	19¾	—	19¾	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝
September	—	—	—	19	19	18⅝	18⅝	—	20	—	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝
October	—	18½	18½	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝
November	—	18¾	18½	18⅝	18⅝	18⅝	18⅝	18⅝	—	18⅝	—	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝
December	—	17¾	—	17¾	17¾	17¾	18⅛	18	—	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
1929																																
January	—	22¾	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
February	22¾	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
March	22	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
April	23	23¼	22¾	22¾	22½	22¾	—	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾
May	19¾	19¾	19¾	19¾	20¾	20¾	20¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾
June	21¼	21¾	21¾	21¾	—	21¾	21¾	—	21¾	20¾	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½	20½
July	20¾	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼
Aug.	21¾	21¾	21	21	21	21	21	21	21	21	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾
Sept.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oct.	19¾	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½
Nov.	17¾	17¾	—	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾
Dec.	—	16¼	16¼	16¼	16¼	16¼	16¼	—	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼
1930																																
January	—	15¾	—	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾
February	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾
March	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾	15¾
April	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½
May	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾
June	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾
July	12¼	12¼	—	—	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½	10½
August	10¾	9¾	9¾	9¾	9	8½	7¾	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7¾	7¾	7¾	7¾	7¾	7¾
September	9¾	8¾	8¾	8¾	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
October	7½	8¼	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½
November	8¾	8½	—	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½
December	9½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14	15.24
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97	15.85
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55	15.34
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18	14.93
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46	14.24
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64	12.45
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30	11.24
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59	9.96
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37	8.28
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67	8.20
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	16.62	9.01
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	16.12	—
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	20.55	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Sept.	Oct.	Nov.	Dec.	Day	Sept.	Oct.	Nov.	Dec.
1	—	3⅝	4⅜	4⅝	17	4⅛	3⅞	4⅝	—
2	4¾	3¾	—	4¾	18	4⅛	3⅞	4⅝	—
3	4⅝	4	4⅛	4¾	19	4	—	4⅝	—
4	4½	4	4⅛	4⅝	20	—	4	4⅝	—
5	4½	—	4½	—	21	—	4⅛	4⅝	—
6	4⅛	3⅞	4⅛	—	22	3⅞	4	4⅝	—
7	—	3⅞	4¼	—	23	3⅞	4⅛	—	—
8	4	4	4⅛	—	24	3⅞	4¼	4⅝	—
9	4⅛	4	—	—	25	3⅞	4⅜	4⅝	—
10	4	3⅞	4¼	—	26	3⅞	—	4⅝	—
11	4⅛	3⅞	4⅜	—	27	3⅞	4¼	4½	—
12	4⅛	—	4⅜	—	28	—	4¼	4½	—
13	4	3⅞	4⅜	—	29	3¾	4⅜	4⅝	—
14	—	3⅞	4½	—	30	3⅝	4⅜	—	—
15	4	3⅞	4½	—	31	—	4⅜	—	—
16	4⅛	3⅞	—	—					

Average Monthly Price Per Pound

Month	1928 Pence	1929 Pence	1930 Pence	Month	1928 Pence	1929 Pence	1930 Pence
Jan.	19.310	9.942	7.471	Aug.	9.300	10.505	4.880
Feb.	15.713	11.875	7.948	Sept.	8.530	10.160	4.075
Mar.	12.736	12.135	7.595	Oct.	8.807	9.620	4.023
Apr.	8.864	10.490	7.391	Nov.	8.596	8.442	4.440
May	8.845	10.717	6.926	Dec.	8.570	7.958	—
June	9.293	10.580	6.195	Average for Year	10.656	10.291	—
July	9.312	11.065	5.648				

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Nov.	Dec.	Day of Month	Nov.	Dec.	Day of Month	Nov.	Dec.
1	11.51	10.40	11	11.00	—	21	10.85	—
2	—	10.60	12	11.25	—	22	10.85	—
3	11.20	10.60	13	11.00	—	23	—	—
4	—	10.45	14	11.15	—	24	10.85	—
5	10.95	—	15	11.10	—	25	10.80	—
6	10.85	—	16	—	—	26	10.70	—
7	10.95	—	17	11.10	—	27	—	—
8	11.15	—	18	11.00	—	28	10.55	—
9	—	—	19	11.00	—	29	10.55	—
10	10.80	—	20	10.90	—	30	—	—
						31	—	—

Average Monthly Price Per Pound

Month	1928 Cents	1929 Cents	1930 Cents	Month	1928 Cents	1929 Cents	1930 Cents
Jan.	19.12	20.22	17.21	Aug.	19.28	18.62	12.03
Feb.	18.40	20.21	15.62	Sept.	18.67	18.83	10.85
Mar.	19.38	20.19	15.13	Oct.	19.62	18.46	10.63
Apr.	20.63	20.29	16.39	Nov.	19.84	17.53	10.96
May	21.58	19.41	16.43	Dec.	20.22	17.28	—
June	21.50	18.74	14.48	Average for Year	19.97	19.03	—
July	21.36	18.62	13.10				

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1928	1929	1930	1928	1929	1930	1928	1929	1930
Jan.	110,244	76,342	126,068	46,441	93,330	65,483	156,685	169,672	191,551
Feb.	108,955	90,058	134,790	48,044	75,790	71,015	156,999	165,848	205,805
Mar.	114,061	100,536	141,843	43,378	67,065	63,646	157,439	167,601	205,489
Apr.	113,083	107,659	148,272	32,783	65,798	63,261	145,866	173,457	211,533
May	105,356	97,192	146,179	33,145	65,795	68,168	138,501	162,985	214,347
June	90,193	92,061	151,485	38,392	54,668	58,657	128,590	146,729	210,142
July	83,242	92,535	152,001	42,943	46,145	58,826	126,185	138,680	210,827
Aug.	68,994	90,769	158,178	54,904	49,423	61,168	123,898	140,192	219,346
Sept.	68,851	84,362	169,607	52,692	58,758	60,923	121,543	143,120	230,530
Oct.	66,421	88,483	184,701	45,646	59,180	51,122	112,067	147,663	235,823
Nov.	61,956	92,219		75,502	62,358		137,458	154,577	
Dec.	66,166	118,609		92,037	62,388		158,203	180,997	

(Rubber Manufacturers' Association figures raised to 100%.)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1928	1929	1930	At end of	1928	1929	1930
Jan.	66,524	25,191	60,484	July	35,429	30,080	81,048
Feb.	62,964	25,554	64,557	Aug.	32,084	35,605	80,931
Mar.	58,272	28,214	68,923	Sept.	31,440	42,188	83,329
Apr.	53,425	31,368	74,676	Oct.	24,207	47,803	
May	44,628	31,290	77,312	Nov.	17,775	52,454	
June	38,756	31,025	80,260	Dec.	19,815	54,304	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1930					
June	77,616	78,104	78,888	79,699	
July	80,060	80,501	80,814	80,845	
August	80,379	80,044	80,224	80,618	80,611
September	81,830	82,233	82,648	83,136	
October	81,544	82,245	83,102	82,218	
November	77,480	75,159	76,042	76,448	76,670

Stocks in Liverpool

1930					
June	25,320	26,646	27,354	27,493	
July	28,143	28,226	28,126	28,381	
August	28,404	28,660	29,048	29,673	29,789
September	31,159	31,796	34,085	34,858	
October	36,378	37,244	37,211	38,345	
November	38,941	39,336	40,003	40,492	39,933

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1928	1929	1930	End of	1928	1929	1930
Jan.	25,868	29,617	39,727	July	18,663	33,859	45,459
Feb.	22,867	32,373	44,371	Aug.	18,971	30,334	48,132
Mar.	20,538	29,437	45,657	Sept.	14,898	32,138	44,015
Apr.	16,946	26,474	45,473	Oct.	12,149	33,770	39,930
May	17,437	30,764	44,715	Nov.	29,188	30,963	—
June	18,207	30,403	42,451	Dec.	32,895	35,548	—

STOCKS IN OTHER CENTRES

1930 End of	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	44,740	28,440	2,134	5,400	3,668
Feb.	41,955	28,180	2,159	5,000	4,370
Mar.	39,206	27,510	2,220	4,759	4,578
Apr.	39,758	23,580	2,204	4,000	4,482
May	26,482	22,730	2,308	4,000	4,388
June	36,578	20,920	2,316	3,856	4,588
July	38,311	27,290	2,312	4,500	4,665
Aug.	39,482	30,310	2,196	5,200	4,489
Sept.	39,520	32,600		5,834	4,854
Oct.					5,156

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1926	24,199,524	78.8
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,863,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.3
1930			1930		
January	1,601,326	84.0	July	1,449,161	80.7
February	1,653,421	78.9	August	1,504,187	78.1
March	2,061,999	79.1	September	1,052,109	80.2
April	2,339,834	81.1	October	863,579	78.3
May	2,010,067	84.3	November		
June	1,338,226	83.5	December		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944	68,726
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296	69,395
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624	11,838

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1928	1929	1930	1928	1929	1930	1928	1929	1930
Jan.	5,358	6,301	4,485	5,394	6,211	4,406	9,949	12,855	11,924
Feb.	6,363	6,479	4,555	5,031	4,951	4,195	11,721	14,525	11,410
Mar.	6,819	7,049	4,863	5,731	6,289	4,717	12,389	15,329	12,513
Apr.	6,178	7,391	5,648	5,812	6,838	5,089	12,717	15,870	13,076
May	6,759	7,636	5,717	6,457	6,735	5,216	13,024	16,733	13,432
June	6,692	6,847	5,122	7,117	6,800	5,294	12,162	16,497	13,277
July	6,498	6,320	3,991	7,895	7,364	5,447	11,157	15,034	11,812
Aug.	7,469	5,693	4,166	8,403	7,354	5,175	10,034	13,337	10,848
Sept.	6,802	4,460	3,365	7,145	5,623	4,405	9,705	12,070	9,812
Oct.	7,326	4,611		5,717	4,649		11,520	12,042	
Nov.	6,075	3,378		4,998	3,355		12,579	12,127	
Dec.	5,605	3,057		4,591	3,237		13,624	11,838	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180	68,829
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127	70,592
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117	12,807

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1928	1929	1930	1928	1929	1930	1928	1929	1930
Jan.	5,441	6,109	4,607	6,072	6,789	4,857	12,982	14,424	12,704
Feb.	6,895	6,346	4,634	5,431	4,948	4,337	14,650	15,936	13,036
Mar.	6,231	7,000	4,941	5,731	6,317	4,727	15,573	16,641	13,179
Apr.	6,661	7,157	5,510	5,702	6,716	4,848	16,638	17,000	13,784
May	7,168	7,181	5,535	6,300	6,598	5,074	17,702	17,745	13,852
June	6,953	6,542	4,950	7,136	6,515	5,265	17,159	17,294	13,612
July	6,674	5,793	3,939	8,729	7,605	5,855	14,974	15,311	11,657
Aug.	8,343	5,481	4,796	9,350	7,672	5,762	13,931	13,072	10,737
Sept.	7,103	5,190	3,817	7,154	5,859	4,541	13,543	12,585	10,065
Oct.	6,929	5,000		5,662	4,689		15,285	12,802	
Nov.	5,592	3,544		5,002	3,480		15,743	12,845	
Dec.	5,184	3,484		4,858	3,404		16,117	12,807	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			Grand Total
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	25,584	5,703	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453,956	91,296	21,492	16,511	4,981	566,744
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.	380,011	321,195	58,816	14,523	8,975	5,548	394,534
Nov.	217,570	170,928	46,642	9,424	7,137	2,287	226,994
Dec.	119,950	92,717	27,233	5,495	4,426	1,069	125,445
TOTAL	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930							
Jan.	273,089	235,099	37,990	10,388	8,856	1,532	283,477
Feb.	346,940	297,483	49,457	15,548	13,021	2,527	362,488
March	401,378	336,178	64,200	20,730	17,165	3,565	422,108
April	442,630	375,171	67,459	24,257	20,872	3,385	466,887
May	417,154	362,784	54,370	24,672	21,251	3,421	441,826
June	335,475	289,704	45,771	15,090	12,194	2,896	350,565
July	262,363	222,700	39,663	10,188	8,556	1,632	272,551
Aug.	223,046	187,288	35,758	9,792	6,946	2,846	232,838
Sept.	216,877	175,720	41,157	7,957	5,623	2,334	224,834
Oct.	150,044	112,800	37,244	4,541	3,206	1,335	154,585
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[6]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[4]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,528
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,821	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,886	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1928:															
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	513	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	43,960	15,593	28,367	5,723	800	966	548	453	6,264	6,961	13,487	1,059	1,922	733	67,238
June	40,398	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,693	11,270	757	1,398	548	61,017
July	46,454	15,071	31,383	5,457	974	1,247	641	462	6,422	7,192	13,995	575	1,457	543	70,348
Aug.	50,441	15,469	34,972	6,079	685	993	641	431	4,644	7,298	10,782	1,032	1,563	499	69,619
Sept.	53,484	12,392	41,092	7,993	884	832	640	406	4,708	7,517	10,149	655	1,566	504	76,446
Oct.	47,937	12,516	35,421	8,381	812	1,047	671	485	4,697	8,295	10,512	893	1,606	445	73,265
Nov.	46,279	11,204	35,075	6,660	1,065	668	672	278	4,760	6,711	9,380	771	1,442	535	68,017
Dec.	46,147	15,018	31,129	8,688	900	930	672	320	5,189	8,279	11,102	966	1,674	443	70,287
1930:															
Jan.	52,535	11,773	40,762	7,741	1,560	791	600*	386	5,709	7,831	8,920	856	1,837	585	77,578*
Feb.	48,947	12,960	35,987	7,825	1,245	847	600*	469	6,900	7,191	11,414	944	1,797	480	75,699*
Mar.	47,320	13,236	34,084	6,269	1,129	976	600*	391	5,796	6,612	11,070	643	1,674	536	69,780*
Apr.	45,517	16,331	29,186	5,030	856	1,026	600*	366	4,802	6,326	12,582	433	1,201	630	63,038*
May	49,388	36,135	13,253	5,947	975	917	600*	350	6,352	6,661	11,916	753	1,383	555	49,662*
June	36,657	12,120	24,537	4,152	778	1,040	500*	392	4,728	4,776	9,512	425	974	551	52,365
July	41,347	12,759	28,588	4,619	792	1,087	500*	327	6,022	5,891	9,770	648	810	418	59,472
Aug.	47,982	10,304	37,678	6,779	600	740	500*	335	5,982	7,197	9,520	394	809		
Sept.	48,529	8,087	40,442	7,920	343	680	400*	234	5,960	6,358	7,302	527	1,093		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927 and 1,437 in 1928. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, and 1,459 tons in 1928. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,399
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	589	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,012
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,808
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,184	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,015
1928:															
July	28,362	—1,374	3,518	3,887	2,692	2,026	1,598	724	591	895	395	294	175	384	43,837
Aug.	26,827	48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	68	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,837	1,278	20	603	597	345	377	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,846
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	435	263	206	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,270
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,520	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,478
May	48,475	5,112	3,152	3,682	2,937	2,314	1,417	996	1,437	854	201	468	37	277	71,359
June	38,821	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	520	65,882
July	41,114	4,993	4,839	3,559	3,205	2,388	2,023	1,056	2,918	1,039	253	519	30	465	68,401
Aug.	35,397	14,594	4,645	4,082	2,879	3,663	908	1,234	724	902	254	429	25	319	70,055
Sept.	32,912	17,010	3,889	4,691	1,908	3,511	1,224	1,235	853	672	253	361	91	477	68,453
Oct.	36,040	16,111	4,489	3,355	1,821	3,902	1,338	1,073	1,125	1,147	278	710	91	201	72,181
Nov.	41,097	13,141	3,082	3,776	2,709	3,221	1,275	1,226	1,453	361	253	595	62	313	72,564
Dec.	40,588	12,434	4,274	2,921	2,114	2,251	1,198	1,200	726	741	52	677	90	443	69,709
1930:															
Jan.	44,911	11,106	4,207	3,862	2,842	2,805	910	826	332	612	209	552	200*	577	73,949
Feb.	40,792	10,293	4,482	3,697	2,250	1,386	1,385	2,705	457	1,143	188	315	200*	239	69,533
Mar.	42,216	12,346	4,354	4,289	3,776	2,663	1,083	168	975	678	358	322	200*	263	73,691
Apr.	43,036	13,058	5,006	4,488	2,303	2,769	2,067	949	673	1,431	158	461	200*	255	76,810
May	40,012	9,861	5,233	4,379	2,593	2,699	1,279	1,677	64	1,250	230	274	200*	346	70,599
June	37,374	9,645	4,458	3,794	2,579	2,677	1,378	1,454	67	691	343	507	200*	282	65,500
July	32,785	7,650	3,311	3,449	3,347	1,206	587		84	939	172	756	200*	342	
Aug.	34,513	8,369	3,953	3,515	2,108	2,170	886		265	888	37	747	200*	450	
Sept.	34,373	16,015		4,089	1,578		1,279				221				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1929:				
October	6,116,000	22,386,000	3,502,000	5,887,000
November	4,395,000	17,863,000	3,400,000	4,932,000
December	2,291,000	14,781,000	3,003,000	4,751,000
1930:				
January	3,281,000	15,470,000	3,496,000	5,169,000
February	3,441,000	14,172,000	2,338,000	5,376,000
March	3,570,000	15,439,000	2,582,000	5,981,000
April	4,029,000	17,762,000	2,593,000	5,989,000
May	3,597,000	15,603,000	1,939,000	6,163,000
June	3,379,000	15,795,000	2,734,000	5,318,000
July	2,940,000	15,117,000	2,663,000	4,910,000
August	3,458,000	13,735,000	1,473,000	4,552,000
September	6,481,000	14,322,000	2,193,000	4,083,000

(1) Not available; (2) Last 9 months only.

Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	——	——
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	——	——
1921	82	28,045	814	1,077,859	1,745	351,893	——	——
1922	127	57,040	812	978,765	2,335	403,812	——	——
1923	1,155	542,227	700	898,524	4,565	853,308	——	——
1924	1,356	536,392	464	568,456	6,165	1,287,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,205	2,458,136	3,728	1,787,997
1929:								
Nov.	125	47,796	13	11,600	583	182,677	394	185,670
Dec.	100	41,328	25	19,955	550	156,939	281	132,265
1930:								
Jan.	150	55,272	28	28,549	509	141,384	407	194,703
Feb.	75	25,956	52	45,319	367	93,087	311	153,848
Mar.	148	50,007	16	12,498	522	128,844	279	107,847
Apr.	75	19,856	58	54,548	410	103,089	226	98,239
May	172	57,760	17	13,645	602	144,415	749	242,385
June	168	51,561	52	47,000	532	120,424	389	129,368
July	93	26,000	24	17,463	45	102,325	242	78,688
Aug.	50	14,000	11	5,600	766	168,511	944	253,127
Sept.	100	28,000	45	39,512	486	86,664	402	127,751
Oct.	64	18,527	36	30,702	490	113,638	306	99,637

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

	Consumption					Consumption				
Year	Production	Tons	% to Crude	Stocks*	Year	Production	Tons	% to Crude	Stocks*
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,848	Aug.	19,049	17,890	41.7	15,881
Mar.	17,069	20,680	57.9	19,538	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.8	19,283	Oct.	17,182	18,420	45.1	17,026
May	18,945	20,215	54.1	18,137	Nov.	18,245	18,380	49.1	22,399
June	18,781	18,140	48.2	18,709	Dec.	17,728	14,320	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,287	20,236	48.7	19,679
Feb.	18,094	19,829	47.7	23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,867	46.7	22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,899	22,435	47.3	20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1	19,479	Nov.	14,363	15,330	55.4	26,080
June	18,416	18,141	42.0	17,980	Dec.	13,429	11,531	49.0	27,464
1930:									
Jan.	15,010	17,454	47.6	24,241	July	12,322	12,384	42.3	23,873
Feb.	15,846	14,559	44.5	24,243	Aug.	12,047	10,985	35.9	22,980
Mar.	17,400	15,241	42.2	24,415	Sept.	11,433	10,480	41.4	21,996
Apr.	17,828	16,904	42.0	24,587	Oct.	12,349	10,724	39.3	21,145
May	17,812	17,052	42.7	23,356	Nov.	.....	.....	.....	.....
June	15,714	14,063	40.8	24,449	Dec.	.....	.....	.....	.....

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.

REVIEW DESK

Books, New Publications, Catalogues, Etc.

RUBBER IN AIRCRAFT DESIGN. Published by the Rubber Growers' Association, Inc., 2 Idol Lane, Eastcheap, London, E. C. 3, England. 1930. 14 pp. For free distribution.

The applications of rubber in aircraft design are constantly being extended, as was revealed in a comprehensive series of articles in THE RUBBER AGE last year. Aside from the tire equipment, a modern airplane uses an appreciable amount of rubber in shock absorbers, tension rings, mountings, upholstery, parachute design and various accessories. This pamplet, an illustrated reprint from the Bulletin of the Rubber Growers' Association, is a brief summary of the subject, dealing with it in general terms and omitting many of the smaller applications.

SYMPOSIUM ON DEVELOPMENTS IN AUTOMOTIVE MATERIALS. Published by the American Society for Testing Materials, 1315 Spruce Street, Philadelphia, Pa. 1930. 186 pp.

At a regional meeting in Detroit last March, the 12 papers that form this volume were originally read. The first six papers are devoted to metals, while others discuss motor fuels, automotive lubricants, automobile finishes and phenol resinoids. The one of greatest interest to the rubber industry, however, is by Walter C. Keys, chief engineer of the automotive development department of the United States Rubber Company, on "Advances in Rubber for the Automotive Industry." Mr. Keys lists 65 uses of rubber in the modern automobile and describes and illustrates many of the individual applications.

COTTON FABRICS AND THEIR USES. Published by the Textile Division, United States Department of Commerce, Washington, D. C. 1930. 48 pp. $0.05.

The result of a comprehensive survey of the different types of cotton fabrics manufactured and the uses of each fabric and of cotton in general by various industries, this report is divided into two parts. A first list gives alphabetically the names of these fabrics (approximately 200) about which information has been obtained; a second list gives under each fabric a general description thereof and its various uses; a third list gives the names of articles made in whole or in part of cotton without reference to their uses and lists the articles of cotton used by various industries and professions; and a final list gives under each use the fabrics used therefor. Uses in various branches of the rubber industry occupy an appreciable amount of space in the booklet.

INDEX OF ECONOMIC REPORTS. Published by the Policyholders Service Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City. 1930. 60 pp. For free distribution.

More than 400 articles and reports on problems of management, which have been published by the Metropolitan Life Insurance Company, are listed in this index and represent the results of major investigations of management problems by the company's Policyholders Service Bureau. The work of this bureau is a striking example of the realization by a company of such prominence of its responsibilities to those who have invested their money with it, a comprehensive organization having been developed with the primary purpose of helping to stabilize the employment and income of its policyholders. The reports are classified according to the field of management and according to trade or industry.

NATIONAL SURVEY OF FUEL OIL DISTRIBUTION IN 1929. By E. B. Swanson. Published by the American Petroleum Institute. 1930. 30 pp. For free distribution.

Statistical data on the distribution, by states and industries, of gas oil and fuel oil in the United States are presented in this report by the Bureau of Mines of the Department of Commerce, prepared in co-operation with the American Petroleum Institute.

ANNUAL REPORT OF DIRECTOR OF BUREAU OF STANDARDS. By George K. Burgess. Published by the United States Department of Commerce, Washington, D. C. 1930. 56 pp. $0.10.

Summaries of the major investigations of the Bureau of Standards in the fiscal year ended June 30, 1930, are presented in this report. Of particular interest to the rubber industry are the studies of the crystallization of rubber, abrasion tests for rubber, antioxidants in rubber compounds, and the effect of humidity and temperature on the properties of rubber compounds.